THE MARINE REVIEW

VOL. 38. CLEVELAND, AUGUST 13, 1908. NEW YORK No. 7

REORGANIZING MORSE COMBINE.

The plan of reorganization for the Consolidated Steamship Lines, well-known as the Morse steamship combine, has recently been announced. The bondholders' committee which drafted the plans are very hopeful of its acceptance. The main features of the scheme are.

(1) The Eastern company and also the Metropolitan company are left out of the plan for financial relief. They are already in the hands of receivers, as is also the parent organization.

(2) The committee's plan, therefore, specifically provides for the acquisition by or on behalf of the committee and the transfer to the trustee under the new mortgage only of the stocks of the Clyde, Mallory, New York & Cuba Mail and New York & Porto Rico companies, known as the four Southern companies, the committee reserving to itself the right either to pledge the stocks of the Eastern and Metropolitan companies as further security to the new bond issue or otherwise to dispose of or deal with said stocks as the committee may deem to be in the best interest of the depositing bondholders.

(3) The four smaller companies are to be taken over by foreclosure and become constituent companies in a new combination, to be known as the Atlantic, Gulf and West Indies Steamship Lines.

(4) Upon the acquisition of the four smaller companies new securities will be issued.

(5) The bondholders' committee announced yesterday that over 90 per cent of the bonds outstanding have been deposited with the committee.

The properties owned by the Consolidated Steamship Lines consist of substantially the entire capital stock of the following steamship corporations: Clyde Steamship Co., Mallory Steamship Co., New York and Cuba Mail Steamship Co., New York & Porto Rico Steamship Co., Eastern Steamship Co. and Metropolitan Steamship Co. control of which was acquired by Charles W. Morse for the purpose of consolidating them under the holding company.

To meet the urgent financial needs of the four Southern companies, the committee will offer for sale $2,400,000 par value of 6 per cent collateral trust notes of the new company, which will be called the Atlantic, Gulf & West Indies Steamship lines, together with $7,200,000 par value of the new company's common stock.

Upon the acquisition of the four Southern companies at foreclosure sale, the new company will issue $15,000,000 collateral trust 50-year 5 per cent gold bonds, of which $12,000,000 will be issued to holders of the old bonds deposited to the amount of 20 per cent of their par value; $1,000,000 will be issued for the expenses of reorganization, cash requirements under decree of sale, and other expenses incidental to the organization of the new company, and the discharge of prior liens of the old company, and $2,000,000 will be reserved for future needs of the company.

There will also be issued $20,000,000 of non-cumulative 5 per cent preferred stock, of which $15,000,000 will be issued to the holders of the old bonds deposited to the amount of 25 per cent of their holdings and $5,000,000 reserved in the treasury.

There will also be issued $20,000,000 common stock, of which $7,500,000, equal to 12½ per cent on their bonds, will go to holders of the old bonds; $7,200,000 to subscribers to the $2,400,000 collateral trust notes, $300,000 for bankers' commission, and $5,000,000 will be retained in the treasury.

EMIGRATION GREATER THAN IMMIGRATION.

Figures compiled by the department of immigration for the fiscal year ending June 30, 1908, show a falling off in arrivals at New York amounting to almost 50 per cent as against the figures for the fiscal year 1906.

Up to July 1, 585,970 aliens passed through Ellis Island; last year, 1,116,295 foreigners arrived here. In the fiscal year just ended approximately 600,000 foreigners left New York for their home countries.

This is the first time in years that this has occurred and is certainly a graphic illustration of the decline in economic conditions in this country. It is interesting to note in connection with this subject that the money order department reports a tremendous increase in money order receipts from abroad, in the past few months, showing for the year an increase of 53,134 orders, representing a sum of $2,538,236.31. This is regarded by the postal authorities to signify that many of the foreigners who returned to their home countries have been obliged to send back some of the money which they took from the country in the general exodus, for the support of families on this side or for the purpose of assisting friends and business associates who were in need of financial aid.

It is assured that upon the return of more settled industrial conditions there will be a rush of foreigners to this country, many of them being those who have now gone to their native lands to bide the time when there should be employment for them here.

Not the least interesting feature of this subject is the fact that the total sum brought by the decreased number of immigrants in the fiscal year just ended was $11,812,000 as against $25,599,893 brought by the million aliens for the fiscal year 1907.

Generated on 2024-08-28 16:19 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

APPEAL BY ATLANTIC STEAMSHIP LINES.

The position which has been assumed by the Trunk Line Association, representing the roads moving grain east of Buffalo and Erie, in refusing to grant such a reduction in freight rates as will enable the export of grain to continue from the Atlantic ports instead of being entirely taken over by the Canadian all-water route, has led to the sending of an appeal by all of the regular trans-Atlantic steamship lines operating out of New York, Boston, Philadelphia and Baltimore, to Mr. C. C. McCain, chairman of the Trunk Line Association.

The communication is as follows:

C. C. McCain, Chairman Trunk Line Association, New York:

Dear Sir.—The undersigned steamship companies operating vessels from New Work, Boston, Philadelphia and Baltimore wish to again call the attention of the railroad companies to the unreasonable rates demanded by them on export grain from lake ports to the seaboard as compared with the rates that are being accepted by the railroad companies from the lake ports to Montreal.

The present basis of the at and east rate from Buffalo to New York and Boston is now 5½ cents, excluding elevation, against the rate from Georgian Bay points to Montreal of 3½ cents, including elevation, as the result of reductions made by the railroads to Montreal since the joint export grain agreement, and it is largely on account of this reduction that the port of Montreal has benefited tremendously in the movement of grain, whereas the American ports have handled practically no grain during the corresponding period.

The present situation is a deplorable one, for which you are responsible, and is killing the steamship business from the four ports named, as we cannot expect any grain until Montreal has been fully supplied.

Steamers have been withdrawn from all the ports named on account of their not being able to get cargoes, while Montreal is not only loading all the regular tonnage, but the favorable grain rates to that port are attracting tramp steamers in addition to the regular lines.

We again appeal to the railroad companies to adjust the situation and reduce their "at and east" grain rate to a reasonable basis in order to partly meet the above competition and we will take care of the balance.

BOSTON.

Cunard Line, Hamburg-American Line, Leyland Line, Red Star Line, Scandianavian-American Line, Warren Line, Wilson Line, White Star Line.

NEW YORK.

American Line, Anchor Line, Atlantic Transport Line, Austro-Americana, Cunard Line, Fabre Line, French Line, Funch, Edye & Co.'s Lines, Hamburg-American Line, Holland-America Line, Italia Line, La Veloce, Lamport & Holt Line, Lloyd Italiano, Lloyd Sabaudo, Navigazione Generale Italiana, North German Lloyd, Phoenix Line, Prince Line, Red Star Line, Scandianavian-American Line, Sicula-Americana, White Star Line, Wilson Line.

PHILADELPHIA.

Allan Line, Atlantic Transport Line, American Line, Furness Line, Holland-America Line, Italia Line, Philadelphia Trans-Atlantic Line, Philadelphia Manchester Line, Red Star Line, Scandianavian-American Line.

BALTIMORE.

Atlantic Transport Line, Blue Cross Line, Donaldson Line, Empire Line, Hamburg-American Line, Johnston Line, Lord Line, Neptune Line, North German Lloyd, Puritan Line, Red Star Line, Scandianavian-American Line.

The position of the railroads regarding the request for a reduction is that when grain does begin to move it will move in sufficient volume to tax the carrying capacity of the "at and east" of Buffalo roads to their full capacity, and therefore any reduction in rates would only be temporary. It is hardly considered probable that this condition of activity can be reached until well into September, and in the meantime, as the petition recites, "steamers have been withdrawn from all the ports named on account of their not being able to get cargoes, while Montreal is not only loading all its regular tonnage, but the favorable grain rates to that port are attracting tramp steamers in addition to the regular lines."

The following official statement of receipts and exports of wheat at the seaboard for the week ending July 25 will be interesting: it will be observed that the exports from Montreal exceed those of all American ports combined:

WHEAT, BUSHELS.

	Receipts.	Exports.
New York	933,500	400,500
Boston	30,772	.....
Philadelphia	426,859	254,753
Baltimore	575,078	441,209
New Orleans	12,000	.....
Galveston	52,000	.....
Montreal	973,816	1,260,693
Totals	3,004,825	2,357,155

After November the Cunard line is to discontinue the Wednesday sailings of the Mauretania and Lusitania when the big liners will be taken in dry dock for a thorough overhauling. They will go into commission again next January.

The two dry docks at Weehawken, N. J., which were recently purchased by Thomas F. Walsh from Frank Gokey have been thoroughly overhauled and are about ready for business.

BALTIMORE'S NEW DOCK SYSTEM.

BY OSCAR F. LACKEY.

(CONCLUDED FROM JULY 23.)

Bids for the construction of Piers 4, 5 and 6 were opened before the board of awards March 11, 1908, and contract awarded to the Sanford & Brooks Co., of Baltimore, the lowest bidders.

Piers 4, 5 and 6 are different in construction from those previously described. There is no timber employed in the construction of these three latter piers, they being entirely of reinforced concrete and steel. The cylinders, built of 4-ft. by ⅜-in. plates joined together by 3 x 3 x ⅜-in. angles, are sunk to a depth of 27 ft. below mean low tide, every 25 ft. center to center along the face line of piers, forming the foundation of pier construction. It was found, by taking a series of borings, that sand and coarse gravel could be had at an average depth of 24 ft., and the cylinders were designed with a sufficient area to resist a load on the floor system of 700 lbs. per sq. ft., and to further care for any superstructure that the lessee of piers may desire to erect. The floor is carried by two 15-in., 45-lb. channels on the face of cylinder and a 4-in. concrete wall in the rear, the wall resting directly on top of the sheet piling. The sheet piling is of reinforced concrete, mixed in proportions of 1 part cement, 2 parts sand and 4 parts crushed stone or gravel, 18 in. wide by 12 in. in depth, with four ¾-in. square bars in tension and four ⅜-in. square bars in compression (the Maxwel deformed bar will be used), 5/16-in. round hoops are placed every 18 in. on center. As the rods on the water side are covered with 2 in. of concrete the effective depth of beam is 9⅜ in.

The reaction on top of sheet piling is taken up in the lattice girder, which is placed a distance of 4 or 5 ft. back of the face line of cylinder, depending upon the present location of sheet piling in old piers, or other obstructions to the driving of new sheet piling that may be encountered. This girder consists of four 6 x 6 x ⅞-in. angles double-laced with 3 x ½-in. bars, 14 in. on center, the width of beam is 2 ft. 6 in. The construction is tied back by means of eight 1⅛-in. square bars to every cylinder, or 25 ft. from center to center of ties. These rods are covered with 3 in. of concrete and are in turn tied to an anchor beam 28 ft. back of the face line of pier, the anchor beam is 1 ft. 3 in. by 3 ft. 6 in., with eight 1¼-in. square bars resting on and in turn tied to reinforced concrete piles. The sheet piling and other piles used will be of the Raymond type.

In order to reduce the cost of construction by making use of the present stone in the wall on the east and west side of Jones Falls, the construction was some-

Generated on 2024-08-28 16:21 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

what changed. Instead of the lattice girder a reinforced concrete beam was substituted. This beam is 2 ft. 2 in. by 2 ft. 6 in. 1 : 2 : 4 mixture, with six 1-in. square bars to take the lateral thrust and five ⅞-in. square bars to take the vertical. On top of this reinforced beam a rubble masonry wall (using the stones taken out of the present wall) will be carried up to an elevation of 6 ft. The foundation and method of tieing back will remain the same. All structural steel to be covered with two coats of an approved paint and 3 in. of concrete in the proportion of 1 : 3 : 5 as a protection.

These piers, with the foundation sunk to a depth of 27 ft., will permit of the dredging alongside of same to an equal depth and make them available for vessels of 27-ft. draught.

The design as a whole is something entirely new in pier construction. This design was adopted after a great deal of consideration and study, and was given the preference over pile and timber, as formerly employed in all pier work in this harbor, for many reasons. In the first place, the bottom of the harbor, where these piers are located, is of such a character that no matter what methods are employed it is out of the question to get timber piles to a sufficient depth to allow dredging of a channel alongside of piers to 27 ft. without doing great injury to the piers. The local conditions are such that to have driven timber piles would have necessitated an additional amount of dredging, adding to the cost of the construction, and then again, I feel it advisable to provide against any possibility of the teredo, a worm which attacks pile and timber from mean low water to a distance of 4 ft. or more below same.

These piers as designed, I feel safe to say, barring unforeseen accidents, will last for generations. The maintenance will be practically nothing for some years and they will present a substantial and pleasing appearance.

The removal of the walls on either side of Jones Falls was made necessary, due to the fact that the present foundations (consisting of piles and timber) are carried to an average depth of 18 ft., making it unsafe to dredge to a depth greater than 15 or 16 ft. The height of the walls at the present time are at places 10 ft. above mean low water, and in order to make use of Jones Falls as a dock and use the east side of Pier 6, a greater depth of water than 16 ft. is required and a wall not higher than 7 ft. above mean low tide. The new plans call for the removal of the drawbridge, foot of Block street, Canton avenue and Eastern avenue bridges, and the dredging of Jones Falls to a depth of 24 ft. The cost of the entire improvement amounts to about $1,300,000.

Pier 4, north of Wood street, is virtually owned by the United Railways & Electric Co., and that part south of Wood street, about 52,000 sq. ft., will be kept by the city and wharfage collected on any and all goods landed over same.

Pier 5 has an area of 245,450 ft. and will be leased as have Piers 1, 2 and 3.

Pier 6 with an area of 218,653 ft., has been designed for the lumber trade. The revenue from Piers 5 and 6 will amount, when leased, to $167,077. The revenue from Pier 4 will vary, but may be estimated at $26,000, or a total for Piers 4, 5 and 6 of $193,077, which, with that of Piers 1, 2 and 3, amounts to $325,231.54 per year.—*Baltimore Journal of Commerce.*

SHIP SUBSIDIES.

(From the *Leavenworth, Kas., Times.*)

Only a few years ago the agitation for the subsidizing of mail steamships plying between this and foreign countries was confined almost wholly to the coast states where the population had a better general knowledge of shipping questions and problems than that of inland areas of the United States. Education along this line has progressed, however, and there will be found quite as strong an advocacy of this proposed policy now in the middle states as there is on the coast. Primarily it somehow goes against the grain of the average American that our mails should be carried in ships flying a foreign flag, that our cargoes should be packed beneath a foreign emblem and that even the coal which is being carried to supply our splendid battleship fleet should be hauled by foreign vessels. Almost every nation that is regarded as of any consequence—our own indeed is really the only noteworthy exception—grants a moderate subsidy to vessels that are manned by its own seamen and built by its own manufacturers, shipping which is used directly to develop that nation's trade in distant ports, and vessels which that nation may press into immediate duty in time of war. It has been shown quite conclusively by figures that the United States could subsidize at a less cost and have available in time of war first class steamships that might be used for collier duty or as cruisers than it could build these vessels and maintain them, an experience which England and other great nations have similarly had and they have not been slow to take advantage of it. The *Times* believes that the Kansas farmer is the most patriotic citizen of the United States and we believe that the spectacle of the United States battleship fleet going around the world followed by colliers carrying a foreign flag is a shame and a disgrace that he would see wiped out.

PRESIDENT ROOSEVELT AT THE NAVAL WAR COLLEGE.

President Roosevelt's attendance at the Naval War College at Newport, R. I., July 22, was a marked event for the future of the American navy, for not only did the chief executive speak to the many assembled officials, but at the conclusion of his address he requested the officers present to submit their views as to what is the matter with the navy. This is regarded by the opponents of what is known as the "bureau system," as a signal victory for them, and it may be regarded as the beginning of the end so far as regards the differences between the active officers and the "bureau" contingency.

President Roosevelt was loud in his praise of a hard-hitting navy, but wished it understood that this did not signify that the nation should be too ready to enter into fighting but only that when it did the opponent should readily cry quits. He also touched upon the emptiness of the Monroe Doctrine without a sufficient navy to carry out its provisions and stated that the voyage of the 16 battleships around South America was a most effective object lesson as to the reality of this doctrine.

What the naval policy of the chief executive is as regards the navy is well summed up in a few words from the address:

"I want a resistless fighting navy, because it is the most effective guarantee of peace that this country can have. Uncle Sam can well afford to pay for his peace and safety so cheap an insurance policy as is implied in the maintenance of the United States navy."

The gathering of officers of the navy was most notable in point of numbers and rank, being the greatest in these respects which had ever been assembled within the college.

Mr. Roosevelt spoke as follows:

"There are only a few things that I desire to say today to the conference, and what I have to say really is said less to the officers present than to the great bulk of my fellow-countrymen outside. I could not speak to you technically. I can speak to my fellow-countrymen, who are deeply interested in the American navy, but who sometimes tend to be misled as to the kind of navy we should have and as to what the navy can and ought to do.

"For instance, there are always certain numbers of well-meaning, amiable individuals, coupled with others not quite so well meaning, who advo-

Generated on 2024-08-28 16:20 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

cate merely a coast defense navy. Such advocacy illustrates a habit of mind as old as human nature itself—the desire at the same time to do something, and not to do it.

"No fight was ever won yet except by hitting, and the one unforgivable offense in any man is to hit soft. That applies to the individual and it applies to the nation, and those who advocate a coast defense navy are advocating that we shall adopt as a national principle the principle of hitting soft. I hope with all my heart that never will this nation of ours hit unless it cannot possibly be helped.

"I believe that the nation should scrupulously refrain from wronging or insulting another nation, that it should put up with a good deal in the way of misconduct on the part of others before going to war. But when this nation does have to go to war, such war will only be excusable if the nation intends to hammer its opponent until that opponent quits fighting.

NOT FOR COAST DEFENSE ALONE.

"For the protection of our coasts we need fortifications not merely to protect the salient points of our possessions, but so that the navy can be footloose.

"A year ago, at the time it was announced that the fleet was to go abroad, there was a certain number of newspapers, especially in my own city of New York, that raised a clamorous protest against it. It took at one time the form of a mistaken prophecy to the effect that the fleet would not be allowed to go around the world, and one of the reasons alleged was that to let it go around the world would leave New York defenseless in the event of war. The theory evidently was that the fleet, or a portion of it, would be used especially to protect New York and other cities in the event of war.

"If war comes at any time in the future, that administration under which it comes will indeed be guilty of folly if they use the fleet to protect any port. Let the port be protected by the fortifications; the fleet must be footloose to search out and destroy the enemy's fleet. That is the only function that can justify the fleet's existence, and that function cannot exist in the case of such a ridiculous fleet as the fleet would be if it were only possible to use it for coast defense purposes.

"In any question of national policy, when statesmen, when the people behind the political leaders, embark on any given policy, they build up for themselves a time of humiliation and disaster in the future if they do not prepare to make that policy effective. There is something to be said (from my standpoint not much, but still something) for the theory that this nation shall never have any interests outside its own borders, and shall assume toward other nations an attitude of such meekness that no trouble can ever possibly come.

"It is a defensible policy. But a wholly indefensible policy would be consistently to work for the assumption of responsibilities without making any provision for meeting the demands necessarily entailed by those responsibilities. To be rich, aggressive, and unarmed, is to invite certain disaster and humiliation.

"We have taken the Philippines, but if we had not taken them not a particle of difference would be made as regards the needs of our naval policies. There has been a division among this people as to taking the Philippines. There has been no division on the Monroe Doctrine, no division on building, maintaining, policing, and defending the Panama canal, no division about Hawaii and Porto Rico, no division about keeping Alaska, which, though on the continent, is just as much separated as if it were an island; no division about asserting our superior right to defend and protect Cuba. Not one of the courses of action thus outlined can be followed out excepting with a first class navy.

"The Monroe Doctrine was in danger of falling not merely into disuse, but into contempt, until we began to build up our navy. The Monroe Doctrine won't be observed by foreign nations with sufficient strength to disregard it when once it becomes their interest to disregard it, unless we have a navy sufficient to make our assertion of the doctrine good. The Monroe Doctrine unbacked by a navy is an empty boast, and there exist but few more contemptible characters, individual or national, than the man or nation which boasts, and when the boast is challenged, fails to make good.

"If we have a coast defense navy only, we had better at once turn over the Panama canal to some stronger and braver nation which would not limit itself merely to a coast defense navy and could protect it. If we should limit ourselves merely to a navy that would confine us to defensive war—war certain in the end to me unsuccessful—it would be well at once to give up Hawaii, to give up Porto Rico, to give up Alaska, and to say that we had no more interest in Cuba than the smallest outside powers.

"If we intend to claim to be a great nation, then we must fit ourselves so that we may be ready at need to make good that claim. That can only be done by building up and maintaining at the highest point of efficiency the United States navy.

"There is a curious corollary to what I am just saying. If we really make good the claim the chances are infinitesimal that it will ever be necessary to do so. The real chance of war for this nation comes only if we combine a policy which disregards the interests or feelings of others with a policy of helplessness to hold our own if our right to do so as we wish is challenged. If, on the other hand, we are ready in very fact to hold our own, the chance becomes infinitesimal that we will be called upon to do so.

THE NAVY AND IMMIGRATION.

"But, constituted as this people is, if we did not have a foreign possession, if we abandoned the Monroe Doctrine, if we handed over to some other power the Panama canal, it would still be necessary for us to have a navy, and a strong, fighting navy.

"We do not want any navy at all if it is not a first class one, and such a navy will be necessary for us just so long as we demand the right to administer our national affairs as we think best. This country is as yet in its youth. In the process of building up many hundreds of thousands of immigrants are coming here from all parts of the world, representing many different nationalities, many different strata of cultivation, of civilization. In consequence there are points of friction between this country and other countries, such as exist in no other nation.

"Ultimately, and, I think, at a not very far distant period, as this country grows up, it becomes more and more important that we should keep on the highest possible level the plane of living of our workingman, for the chief end of a national policy in the country should be to keep on the highest level of prosperity the tiller of the soil and the wage worker, for the prosperity of all other classes will follow their prosperity; therefore, gentlemen, as it becomes more and more important to keep that prosperity on a high level, it is very possible that we shall have to exercise a continually greater supervision, a continually greater exercise of the

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

right of rejection among immigrants who come hither, and shall, it may be, take an attitude that will tend at first to provoke friction. Now, it is our undoubted right to say what people, what persons, shall come to this country to live, to work, to become citizens.

"The theory of certain of our fellow-citizens that we can permanently follow a policy of peace with insult is erroneous. We must stand up for our rights firmly, but temperately and courteously and with all possible respect, not merely for the rights, but for the feelings, of others.

"It is absolutely necessary that, if we claim for ourselves the right to choose who shall come here, we shall be in trim to uphold that right if any power challenges it, and it cannot be upheld by a coast defense navy. It can be upheld only by the possession of an efficient fighting navy, a navy able to preserve the honor and the interest of the United States, not by inviting attack on our shores, and then seeing if we cannot repel it, but by taking such action as shall guarantee us against our shores being attacked.

THE VOYAGE OF THE BATTLESHIPS.

"At the present day the Monroe Doctrine is unchallenged, and the people abroad who used to sneer at it, now say it is a pretty good doctrine after all, a useful doctrine, on the whole, for the peace of the world. What has produced that change? Words? Not a bit of it. Diplomacy? Only in so far as diplomacy rested on the substantial basis of potential force. The voyage of the 16 battleships around South America, through the Straits of Magellan, from Hampton Roads to Puget Sound—that was the most instructive object lesson that had ever been afforded as to the reality of the Monroe Doctrine.

"Now, gentlemen, I wish to reiterate, with just as much earnestness as I have spoken today on other subjects, that I want a resistless fighting navy, because it is the most effective guarantee of peace that this country can have. Uncle Sam can well afford to pay for his peace and safety so cheap an insurance policy as is implied in the maintenance of the United States navy. All of the leaders of the people are fond of assuring this people that it is a great people.

"We are a great people. That ought not to be a subject for boastfulness, it ought to be a subject for serious consideration, because of the heavy responsibilities that go with it. We cannot help playing a great part in the world, but we can very easily help playing that part well, and to be a great people and make a great failure is as unattractive a picture as history affords. It is not open to us to decide whether or not the career that we lead shall be important; it has got to be important. All we can decide is as to whether our success shall be great or our failure great; we are sure to make either a great failure or a great success.

"I would not pretend for a moment, gentlemen, to you or any one else, that merely military proficiency on land or sea would by itself make this or any other nation great. First and foremost come the duties within the gates of our own household, and then our duty is to strive to bring about a better administration of justice, cleaner, juster, more equitable methods in our political, business, and social life, the reign of that orderly liberty which was the first consideration in the minds of the founders of this republic. Our duties at home are of first importance, but our duties abroad are of vital consequence also. This nation may fail, no matter how well it keeps itself prepared against the possibility of disaster from abroad. But it will certainly fail if we do not thus keep ourselves prepared.

"We need greatly, in the interest of peace, in the interest of true national greatness, that the United States navy, with its ships, its officers, its enlisted men, shall at every point be kept in the highest possible condition of efficiency and well being."

AMERICAN AND GERMAN NAVIES COMPARED.

BY WALTER J. BALLARD.

Unless warship building in Germany is pushed more vigorously in the next 10 years than is now contemplated, says *The Nautical Gazette*, our new naval policy definitely laid down in the senate the other day indicates that in 1917, when the present program of construction in Germany ends, the United States will still have a superior sea fighting force and maintain its position as the second naval power in the world.

Today the United States leads in number of battleships and in their speed, armament and gun power, though its construction of the so-called new navy did not begin till 1895, two years later than Germany started work on its modern warships. The United States has 25 effective ships of this class, of 334,146 aggregate tonnage, while Germany has 23 of 276,166 tons. The United States also has 15 armored cruisers of 186,545 tons, against Germany's 10 of 113,528 tons. The total tonnage of American armored ships is 520,691 against 389,694 for Germany.

In the next 10 years the United States will add 20 battleships to its naval strength, while Germany will add only 17.

In addition to its present 25 effective battleships the United States has four well on the way to completion, and two authorized this year, with an agreement for two more to be ordered each year for the next nine years.

The names, dates of commission and tonnage of the present 25 American effective battleships are:

Name.	Commissioned.	Tonnage.
Indiana	1895	10,288
Massachusetts	1896	10,288
Oregon	1896	10,288
Iowa	1897	11,346
Kearsarge	1900	11,520
Kentucky	1900	11,520
Alabama	1900	11,552
Illinois	1901	11,552
Wisconsin	1901	11,552
Maine	1902	12,500
Missouri	1903	12,500
Ohio	1904	12,500
Rhode Island	1906	14,948
Virginia	1906	14,948
New Jersey	1906	14,948
Georgia	1906	14,948
Nebraska	1906	14,948
Connecticut	1907	16,000
Louisiana	1907	16,000
Minnesota	1907	16,000
Vermont	1907	16,000
Kansas	1907	16,000
Idaho	1908	13,000
Mississippi	1908	13,000
New Hampshire	1908	16,000
Total tonnage		334,146

By this schedule it is easy to see what a risk we ran in the Spanish-American war in 1898 with only four (then) first-class battleships.

The four battleships building are:

Name.	Tonnage.
Delaware	20,000
North Dakota	20,000
Michigan	16,000
South Carolina	16,000
Total tonnage building	72,000

The two battleships authorized this year are to be of the 20,000 (Dreadnought) class.

The names, dates of commission and tonnage of the 23 German effective battleships are:

Name.	Commissioned.	Tonnage.
Weissenburg	1893	9,874
Kurfuerst Friedrich Wilhelm.	1893	9,874
Brandenburg	1893	9,874
Worth	1894	9,874
Kaiser Friedrich III.	1898	10,974
Kaiser Wilhelm II.	1900	10,974
Kaiser Karl der Grosse.	1901	10,974
Kaiser Wilhelm der Grosse.	1901	10,974
Kaiser Barbarossa	1901	10,974
Wittelbach	1902	11,643
Zahringen	1902	11,643
Wettin	1902	11,643
Mecklenburg	1903	11,643
Schwaben	1903	11,643
Braunschweig	1904	12,997
Hessen	1905	12,997
Preussen	1905	12,997
Elsass	1905	12,997
Loihringen	1906	12,997
Deutschland	1906	13,200

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Hanover	1907	13,200
Pommern	1907	13,200
Nassau	1908	19,000
Total		276,166

For the moment Germany's largest completed battleship—the Nassau—is 3,000 tons larger than either of our six largest—16,000 tons each.

The German battleships building are:

Name.	Tonnage.
Ersatz Wurtemburg	19,000
Ersatz Baden	19,000
Ersatz Sachsen	19,000
Schelsein	13,200
Schleswig-Holstein	13,200
Total tonnage building	23,400

"A significant feature in the comparison," says *The Nautical Gazette*, "is to be found in the fact that foreign experts regard as obsolete only three of the American battleships, the Indiana, Massachusetts and Oregon, while four in the German navy are so condemned. Those four, like the three Americans, are the first units of the new navy." The two American 20,000 (Dreadnoughts) authorized this year can be begun at once, giving us four great ships of this class before the new German vessels can be launched. This is for the first time possible because the plans are ready, being practically the same plans that are serving for the Delaware and North Dakota.

The future of the United States is very largely in the hands of the navy of the United States, as, necessarily, in our international relations we are of more importance as a naval power than as a military power.

STEEL CORPORATION REPORT.

The United States Steel corporation has declared the regular quarterly dividend of 1¾ per cent on its preferred and half of 1 per cent on its common stock.

The United States Steel corporation reports for the quarter ended June 30 last earnings of $20,265,756, as compared with $18,229,005 for the quarter ended March 31 last, and $45,503,705 for the corresponding quarter a year ago. The surplus for the June quarter, after all charges and dividends on both stocks, was $195,595, contrasted with $7,865 for the quarter ended March 31 last and $3,497,080 in the corresponding quarter a year ago. The unfilled orders on the books of the corporation on June 30 were 3,313,876 tons, against 3,765,343 tons on March 31, and 7,603,878 tons for June quarter, 1907. Accompanying the statement of earnings the corporation gave out the following:

"The average daily bookings for the first 24 days of July was in excess of 26,000 tons a day, equivalent to 72 per cent of full capacity. This tonnage is well distributed, being composed of all grades of finished steel with the single exception of rails, of which up to the 24th inst. there has been no material increase in sales."

STATEMENT OF EARNINGS.

The statement of earnings is as follows:

April, 1908		$6,761,680
May, 1908		6,021,279
June, 1908		7,482,797
Total earnings after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of the subsidiary companies		$20,265,756
Less charges and appropriations for the following purposes, viz:		
Sinking funds on bonds of subsidiary companies	$ 611,605	
Depreciation and reserve funds	3,300,161	
		3,911,766
Net earnings		$16,353,990
Deduct:		
Interest for the quarter on U. S. Steel Corporation bonds outstanding	$5,972,498	
Sinking funds for the quarter on U. S. Steel Corporation bonds, viz.:		
Installments	$1,012,500	
Interest on bonds in sinking funds	326,965	
	1,339,465	
		7,311,963
Balance		$ 9,042,027
Dividends for the quarter on stocks of the United States Steel Corporation, viz.:		
Preferred, 1¾ per cent	$6,304,919	
Common, ½ per cent	2,541,513	
		8,846,432
Surplus for the quarter		$ 195,595

W. J. FILBERT, *Comptroller.*

PLUS CANAL BUT MINUS SHIPS.

BY WALTER J. BALLARD.

Consul Kellogg, of Colon, Panama, reports that American merchant vessels are conspicuous by their absence at that port, now so much used in American interests. With the exception of a little freight carried by five passenger steamers, all the material and supplies used in constructing the Isthmian canal and the Panama railroad are received in foreign bottoms.

The number of tramps or cargo steamers arriving at Colon, and at the adjacent American port of Cristobal, with cargoes from the United States for the canal and the railroad showed an increase during 1907 of about 12 per cent over the arrivals of 1906, which were 104 vessels, of a total tonnage of 232,409. Of these vessels about 80 per cent were Norwegian and the remainder British, American freight vessels being entirely absent. The only American line of steamships connecting Colon with the outside world is the Panama Railroad Steamship line of five steamers which arrive and depart from the American port of Cristobal, canal zone.

Eight separate foreign steamship lines trade at Colon, with mostly weekly sailings. This demonstrates the size and value of the trade of that port, and is another striking evidence of the necessity of an American merchant marine.

While Germany and England are increasing their merchant marine, their trade with Latin America is also increasing. By the time our Isthmian canal is completed, each will have a trade there of very large proportions. Even now they, with their ships, are profiting out of our canal expenditures.

The American Panama canal is aimed to give us commercial supremacy, but how can that most desirable object be attained without American ships?

William Abbott & Co., Milford, Del., recently completed the schooner Calhoun E. Ross. She was built for the general coating trade by a syndicate of Seaford and Milford business men.

Charles L. Rohde & Sons, Baltimore, Md., are soon to begin the construction of a 100-ft. open scow for Louis Grebb and they also have a covered lighter nearly completed for J. B. Adams & Co.

W. L. Bean, Camden, Me., has been awarded contract to build a three-masted schooner of about 750 tons for Capt. W. S. Theall, of Chelsea, Mass. She is to be completed next winter.

L. D. Shaffner, of Bridgetown, Annapolis, Nova Scotia, has launched the three-masted schooner C. D. Pickles of 450 tons register. She is the twenty-first vessel to be built by Mr. Shaffner.

The Richmond Locomotive Works, Richmond, Va., which was formerly the Trigg yard, is building a dipper suction dredge for operation on the Nile, in Egypt. The dredge was designed by W. A. Robinson.

Generated on 2024-08-28 16:21 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

MAJ. JUDSON'S REPORT.

Milwaukee, Wis., Aug. 4.—Maj. W. V. Judson, engineer in charge of government improvements at Milwaukee and vicinity, in his annual report to the secretary of war, makes no estimate for an appropriation for next year, for money to improve the Milwaukee harbor. He says there are sufficient funds on hand to complete the projected work and to maintain the works until the end of the fiscal year 1910. He reports that 1,940 ft. of the concrete superstructure on the new breakwater has been completed and that there are 1,860 ft. yet to be built. Work on the inner harbor is still embarrassed, he says, by the fact that the city of Milwaukee has not yet complied with the law which imposed certain conditions to be met by the city before any money could be expended in extensive improvements on the inner harbor.

The engineer represents that certain temporary improvements be made at Racine to preserve the pier from destruction by storm. He recommends that no immediate expenditure be made for new improvements, but suggests that when it is finally determined to make the improvements, the north breakwater should be extended to the shore and the north pier entirely removed, while the south pier should be rebuilt. He complains that the government dredging plant is inadequate and recommends that the government expend $200,000 in building a sea-going hopper dredge, similar to the General Gillespie, which is now operating on the eastern shore of Lake Michigan. He says that such a dredge would serve the purposes of all the work now being done on the western shore of Lake Michigan, including Chicago, and that the ultimate cost would be less and the time could be shortened one-half. He estimates that $20.000 should be appropriated next year for continuing work at Racine. For Kenosha, $30,000 is recommended. In regard to the Fox River improvements, Maj. Judson declares that the benefits to commerce that would flow from improving the Fox river would be so small as to be incommensurate with either the initial cost or the maintenance, and he recommends, therefore, that no more money be expended for improving the river above Montello.

For Menominee harbor and river he recommends an appropriation of $13,800. The piers are in bad condition above the water line, and he suggests that 320 feet of the south pier and 600 feet of the north pier should be rebuilt.

Of Oconto harbor, Maj. Judson says:

"In its present condition this harbor is of no value to commerce. It is believed that no benefit to commerce would result from maintaining the projected channel depth of 9 ft., it being utterly inadequate to the needs of navigation, therefore no estimate is submitted."

Regarding Green Bay harbor, he reports that the outer channel from the mouth of the Fox river to Tail Point light is in fair condition, although there are several shoals with depths of 19 ft. The inner channel in Fox river below De Pere is in bad condition. Soundings taken in January, 1908, showed a shoaling over practically the entire channel, in some places as much as 4 ft., since the completion of the project in 1899. Maj. Judson estimates that $40,000 will be needed next year for this improvement. He reports that $30,000 of the appropriation made under the Act of March 2, 1907, for Sturgeon Bay may be turned back into the United States treasury. This appropriation was made on the theory that it might be necessary to change the bridge across Sturgeon Bay and that it might be necessary also to acquire certain vested interests. He reports that of the $50,000 authorized, $20,000 only will be needed for maintaining the canal and harbor of refuge, and that there are no vested interests to be acquired, and that $1,400 remaining of the $20,000 will be sufficient to complete the dredging. No present estimates for future appropriations for this work are submitted.

Maj. Judson has advised the war department that he will submit a special report later on the work on Algoma harbor. A new crib and breakwater are being built after a plan of caisson construction. The caissons are being built at the government plant at Kewaunee. Six of these had been constructed at the close of the fiscal year at less cost than was estimated. It is a novel construction and Major Judson intimates that it will be successful. The money already appropriated is sufficient, he predicts, to meet all possible expenditures up to the close of the fiscal year 1910.

Of Kewaunee harbor he says that 1,200 feet of the north pier and 1,535 feet of the south pier should be cut down to the water surface and rebuilt because it is in a dilapidated condition, and he estimates that $50,000 will be needed for the improvement. He asks $5,000 for Two Rivers, but makes no estimate for Manitowoc.

Of Sheboygan harbor he says: "When further improvement of this harbor is undertaken the north breakwater should be extended to the shore and the present north pier be removed, and the south pier be rebuilt. He estimates that $17,000 will be needed from the next congress for this work.

The engineer asks for $16,000 for Port Washington harbor to rebuild 450 feet of the north pier and 550 feet of the south pier.

He says: "A 13-ft. channel is entirely incommensurate with the cost of maintenance. A harbor even for the smallest vessels should have at least 16 ft. depth."

But he points out that if the depth is increased to 16 ft., there would be a proportionate increase in the danger to ships anchored within the harbor from wave action which is already a serious menace, at the present depth of the harbor.

NICHOLSON SHIP LOG.

Messrs. Barrett & Lawrence, Philadelphia, eastern agents for the Nicholson Ship Log Co., are now busy equipping the battleships Idaho and Mississippi with the No. 1 log. The new fast scout cruisers Salem, Chester and Birmingham, and the transport ships Kilpatrick and Sheridan, are also being equipped. The United States navy department has made very exhaustive tests of the value of the Nicholson ship log to navigation, and the fact that so many government vessels are being equipped with the apparatus shows their appreciation of its exceptional merits.

The Nicholson ship log seems to be gaining an enviable position in the world of navigation, and very justly so, being in a class by itself and regarded by expert navigators as the most reliable and accurate device of the kind yet produced, and invaluable aboard ship. The fact that this log dispenses with all lines and trailers, can be located in the chart room or on the bridge, and, with ordinary care, will operate perfectly for an indefinite period, makes this instrument a particularly desirable addition to the equipment of a steamer or sailing vessel.

Generated on 2024-08-28 16:20 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE MARINE REVIEW

DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Co.

CLEVELAND.

BOSTON.....73-74 Journal Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1328 Monadnock Blk.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
PITTSBURG.....510 Park Bldg.
DULUTH.....411 Providence Bldg.

Correspondence on Marine Engineering, Ship Building and Shipping Subjects Solicited.

Subscription, U. S. and Mexico, $3.00 per annum. Canada, $4.00. Foreign, $4.50. Subscribers can have addresses changed at will.

Change of advertising copy must reach this office on Thursday preceding date of publication.

The Cleveland News Co. will supply the trade with the MARINE REVIEW through the regular channels of the American News Co.

European Agents, The International News Company, Breams Building, Chancery Lane, London, E. C., England.

Entered at the Post Office at Cleveland, Ohio, as Second Class Matter.

August 13, 1908.

GERMANY ON SUBSIDIES.

Mr. Ballin, head of the Hamburg-Amerika line, states that he agrees with the unfavorable report on German shipping trade issued by the Hamburg Association of Ship Owners, which describes the general situation and outlook as extremely unsatisfactory. The main cause is the general commercial depression, and subsidiary causes are the high price of coals, high wages and the collapse of emigration traffic. During the last three months there has been only one-quarter of the amount of emigration recorded in the corresponding months of 1907. The quantity of goods for transport also declined in a remarkable degree. The carrying trade between all North and South American countries, the far east, India, Asia Minor and the Black Sea ports diminished to an alarming extent. This gloomy outlook concludes with a threat that the German shipping companies are determined to take extreme measures to combat those companies of other countries which receive government subsidies. Mention is made of Dutch, Belgian and Swedish shipping companies which have just received new grants and allowances from their respective governments. Mr. Ballin advocates an international congress on the subsidy question, to enable different countries to come to an agreement regarding the support of the respective shipping enterprises by state grants.

Commenting on the subject of "Germany and State Aid" for shipping, the *Shipping Gazette and Lloyds List* says:

"That the public mind of Germany is in a state of ferment on the question of state aid to shipping is illustrated anew by the annual report of the Union of Hamburg Ship Owners. An observing world was well aware, of course, that something of the kind was proceeding, for by no possible chance was the sign given by the Frankfort newspaper which successfully drew Herr Ballin the other day to be misread. In fact, the circumstances are just those in which a comparatively young shipping industry like that of Germany is calculated to turn to thoughts of subsidies. In moments of prosperity the German ship owner very likely never dreams of state aid. When things go well in the world with anybody there is no hankering after change. The times in which grave changes are conceived and matured are invariably associated with discontent, with adverse balance sheets, with a longing for newer conditions which it is hoped will put an end to all current troubles. And whether leading Teutonic ship owners like Herr Ballin care for it or not, the fact seems to stand out clear and unmistakable that a proportion of the ship owners of the Fatherland are looking longingly in the direction of state aid of some kind or other.

"We do not think, to be perfectly candid, that there is anything to wonder at in this, because the problems involved touch the Germans much more closely than they touch us. Our people, it is true, are feeling the effects of the newer subsidized mercantile marines not less acutely than the ship owners of Hamburg. But, of necessity, they are looking at the matter from a vastly different point of view; and in any case they have a weapon in the shape of cheap cargo ship building which is not available on the continent. No European country, in fact, can touch us in cheapness of construction where ocean tramps are concerned. The German's troubles is that the subsidized marines whose competition he feels most are at his very doors. Holland, Belgium and Sweden are trying to bolster up their shipping industries by means of subsidies, and conceivably Holland, Belgium and Sweden are looking to employ their merchant navies in just the places where Germany employs hers. Therefore, we are told in a semi-official way that Germany will soon be forced to take the strongest preventative measures in order to hold her own against the efforts of these countries. In the opinion of Herr Ballin, according to the *Koinische Zeitung*, subsidies are only to be thought of if, after a number of bad years, it is impossible to earn depreciation, or if the subsidy policy of foreign countries increases so much that German shipping companies cannot with their own money compete against it. If the director general of the Hamburg-American line actually said this, his state of mind is obviously not greatly different from that of the average German ship owner. The average German ship owner sees the two processes which Herr Ballin indicates already at work. These are lean years, and the subsidies of foreign countries are increasing. Herr Ballin's view apparently is that the moment has not arrived for the decisive step.

"There is the alternative, of course, suggested by Herr Ballin that a conference should be held for the purpose of discussing the abolition of shipping subsidies. The abolition of shipping subsidies would certainly cure Germany's trouble. It would help us, too, very considerably; that goes almost without saying. We sug-

Generated on 2024-08-28 16:17 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

gested the other day one great difficulty which such a congress would have to face at the outset. Much more serious, however, is a further difficulty which emerges from Herr Ballin's now famous Frankfort letter. In that communication the great ship owner declares that 'what the Hamburg-American line asks the German government to do is to develop its trade via German ports.' Now, what is meant by that declaration? Simply that though Herr Ballin does not desire state aid to shipping, he is anxious that the government should take what means it sees fit to divert trade to German shipping. In all probability such a congress as Herr Ballin indicates will never take place."

LAKE FREIGHT SITUATION.

The docks of the Great Northern railway at Superior were tied up by a strike on Saturday last and no ore has been handled at that dock since. The dock workers on the Duluth & South Shore dock at Marquette also struck later. The dock workers demanded an increase in wages of 25 cents a day, which was not allowed. It is not expected that the strike will spread to the other shipping docks, as the men are perfectly satisfied with their rate of pay. In fact, it was to get the same wages as are paid at other shipping docks that the men at Superior struck. Of course this has crippled the ore trade somewhat. A few carriers have been loaded at Superior by the crews of the ships, but the Lake Seamen's Union later forbade this, taking the crews off of three vessels at Superior. The strike has seriously crippled the Great Northern railroad and more than half of its trains have been laid off. New men are being placed on the docks as fast as they can be secured. The strike will, of course, reduce ore shipments during August. They are not expected to exceed the shipments of July.

As the coal trade is also slow many vessels are having difficulty in getting cargoes, and some are going into ordinary.

PIG IRON SITUATION.

Slow improvement characterizes the iron market. Buying of pig iron has shifted to the east, and about 40,000 tons have been purchased in that section, most of it going to New England. Southern prices have advanced on account of heavy buying reported last week, and little iron in quantity can be bought at $12, Birmingham, for No. 2. The demand for structural material shows improvement, and considerable tonnage has been contracted for during the week. Locomotive builders report orders for 30 locomotives for a South American country, and car builders are receiving both contracts and inquiries. While bar iron is dull and the rolling mills running irregularly, yet the specifications on steel bars have increased. The coke market is dull in nearly all sections, and prices show little change.

HUNTSBERY BUCKET UNLOADING RECORDS.

Some excellent records have just been achieved by the Huntsbery clamshell bucket connected to a Hoover & Mason unloader on the C. & P. ore docks at Cleveland. The steamer M. A. Hanna reached the dock at 5 A. M., Aug. 11, and left at 9 P. M., the same evening, having unloaded 7,062 tons of Yates ore. The Hanna is an old style vessel having beams and stanchions with hatches spaced 24 ft. centers. The Huntsbery bucket worked 11 hours, taking out 1,850 tons of ore, an average of 168 tons per hour. The rest of the ore, consisting of 5,212 tons, was discharged by the remaining five Hoover & Mason rigs, four of the rigs working 13 hours each and one 12 hours, a total of 64 hours, an average of 81.4 tons per hour.

The steamer E. Y. Townsend reached the dock at 8 A. M., Aug. 10, and left at 4 A. M., Aug. 11, having discharged 11,398 tons of Miller ore. The Townsend is a modern steamer constructed on the girder system with hatches spaced 24 ft. centers but with openings running 12 ft. fore and aft, which is 3 ft. greater than ordinary practice. The Huntsbery clamshell bucket worked 14 hours, taking out 2,750 tons of ore, an average of 196.4 tons per hour. The balance of the cargo, consisting of 8,648 tons, was discharged by the remaining five rigs, one rig working 14½ hours, two rigs 15½ hours each and two 16½ hours each, a total of 78½ hours, an average of 110.1 tons per hour.

The Huntsbery bucket cleaned out its share of the cargo without using any scraping device at all, its enormous reach and remarkable heeling qualities enabling it to do so. This bucket has a reach of over 18 ft. and will heel to the full reach when placed against only half a bucket of ore.

Operators as well as makers of unloading machinery are evincing considerable interest in this bucket owing to the great strength and simplicity of its parts and the ease with which it performs work that has not hitherto been possible except through the installation of very expensive types of machinery.

AROUND THE GREAT LAKES.

Gaynor Bros. have completed work upon the breakwater at Lorain.

Mr. George R. Scott has been appointed deputy collector of customs for the new port of Gary.

The Chicago & Duluth Transportation Co. has charge of the steamer Chili for service between Chicago and Duluth.

President Livingstone of the Lake Carriers' Association is of opinion that there will be little or no improvement in the lake trade before Oct. 1.

With the retirement of Col. Symons, Major Graham D. Fitch, of Duluth, becomes lieutenant colonel, and Lieutenant Colonel W. L. Fisk becomes colonel.

Bennett & Schnerback, Muskegon, Mich., have begun work on sinking the last crib of the south breakwater of the new government pier at Holland harbor.

The steamer Columbia, bound from Chicago to Kingston with grain, grounded on the Middle Ground near Kingston, but was released by the Donnelly Wrecking Co.

The new steamer Wyandotte, recently completed by the Great Lakes Engineering Works for the Michigan Alkali Co., carried a cargo of coal from Sandusky to Alpena on her maiden trip. She will return to Detroit with limestone.

As vessel masters have been complaining of the poor condition of the Bernard ranges above the Sault, President Livingstone of the Lake Carriers' Association has arranged for the installation of locomotive headlights. The trees back of the ranges will be cut down and the ranges will be painted.

Capt. Mulholland in discussing the MARINE REVIEW Course Finder with a fellow navigator declared it to be the finest book that had ever been written on lake navigation. He related that while out in Lake Erie at night during a dense fog, when neither lights nor stars could be discerned, he shaped his course according to the Course Finder and fetched up as correctly as he ever had in his life. He expressed his conviction that no master should leave port without a copy of the Course Finder aboard his boat.

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

LAKE SHIP YARD METHODS OF STEEL SHIP CONSTRUCTION.

BY ROBERT CURR.

Section No. 4 shows the arch system of framing and has quite a number of pieces dispensed with.

This idea is for to have an unobstructed hold so that all the stanchions and beams in the hold be done away with.

The items on this section including webs and deep floor number 46 pieces and are as follows:

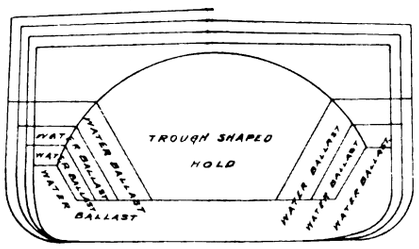
1. Center keelson bracket.
2. Channel floor.
3. Bilge bracket.
4. Topside frame.
5. Topside frame bracket plate.
6. Main deck stringer bracket.
7. Spar deck beam.
8. Spar deck beam.
9. Longitudinal girder stiffeners.
10. Longitudinal girder stiffeners.
11. Longitudinal girder bottom angles.
12. Longitudinal girder top angles.
13. Center keelson.
14. Keel angles.
15. Center keelson top angles.
16. Keel liner.
17. Intercostals.
18. Tank top plating.
19. Tank margin.
20. Tank margin.
21. Bilge ceiling vertical plate.
22. Bilge ceiling top plate.
23. Bilge ceiling stiffeners and bracket plate.
24. Side stringers.
25. Side stringers intercostals.
26. Main deck stringer plate.
27. Main deck stringer angle.
28. Main deck stringer face angle.
29. Main deck stringer intercostal.
30. Spar deck channel girder.
31. Spar deck hatch girder.
32. Spar deck intercostals.
33. Spar deck stringer.
34. Spar deck stringer angle.
35. Spar deck stringer hatch coaming.
36. Deep floor plate.
37. Web plate.
38. Tank top stiffener.
39. Arch plate.
40. Tank top plating seam strap.
41. Girder stiffener plate bracket.
42. Web plate face angles.
43. Arch plate face angles.
44. Arch plate brackets.
45. Bottom frame angle on deep floor.
46. Web frame angle.

A Keel plating.
A A strake.
B B strake.
C C strake.
D D strake.
E. Bilge plating.
F F strake.
G G strake.
H H strake.
J J strake.
K Sheer strake.

The change in construction is very noticeable in this case showing the clear hold without any obstacles.

This tank top is plated fore and aft and makes a simpler tank in construction compared with the cross plated tank and adds more to the strength of the ship.

The bilge ceiling 21, 22 and 23 is composed of plates and angles and is very useful in keeping the cargo clear of the web frames where ceiling plates



SKETCH A.

are slanted and inside of the web frame widths.

The side stringers No. 24 and 25 are composed of channel and flanged plate intercostals.

The main deck stringer is made up with stringer plate No. 26, stringer angle 27, stringer face angle 28 and intercostal No. 29. The spar deck has only one stringer plate and stringer angle and the channel girders are run underneath as usual.

The bottom framing and deep floors and web plates are of the usual Lake system but the arch beams form the new construction and compensates for dispensing with main deck beams and stanchions.

Joseph R. Oldham talked about this construction a few years before he secured a patent for same.

Sketch A. shows development of J. R. Oldham's patent bulk cargo vessel. Patent No. 704362, July 8, 1902.

The *Cleveland Press* of July 19, 1902, referred to the patent as follows:

"Joseph R. Oldham, the naval architect who designed a score of the best known steel steamers on the lakes, has patented a new idea in naval architecture which may revolutionize the construction of lake and ocean going vessels.

Oldham's patents are for bulk cargo vessels and provide for a hold of naval construction.

The principal object is to give a large free hold unobstructed by beams, girders or stanchions.

To compensate for the omission for these he secured the requisite strength by arched girders, which span the hold from bilge to bilge between each pair of hatches.

The vessel is arranged with a large number of hatchways, extending clear across the hold, nearly as far out as the bilges, and so near the hold bulkheads that the discharging buckets or scoops will gravitate almost to the extreme end of the cargo or the upper bottom.

The hold not being encumbered by beams or pillars will permit the free operation of clam shell scoops (grab buckets) in unloading ore or coal and the cargo can be cleaned out in much less time than with the old construction.

The continual striking of beams and pillars by the heavy buckets has a tendency to bend and weaken them, which of course weakens the vessel. This will be obviated.

The upper bottom is made extra strong and extends above the bilge, this giving greater protection in case of grounding or puncture by sunken rocks.

Being extra strong the descending buckets cannot damage it.

Oldham's ideas are attracting much attention among the marine men who have long realized the drawbacks attendant in unloading vessels with holds of the ordinary construction.

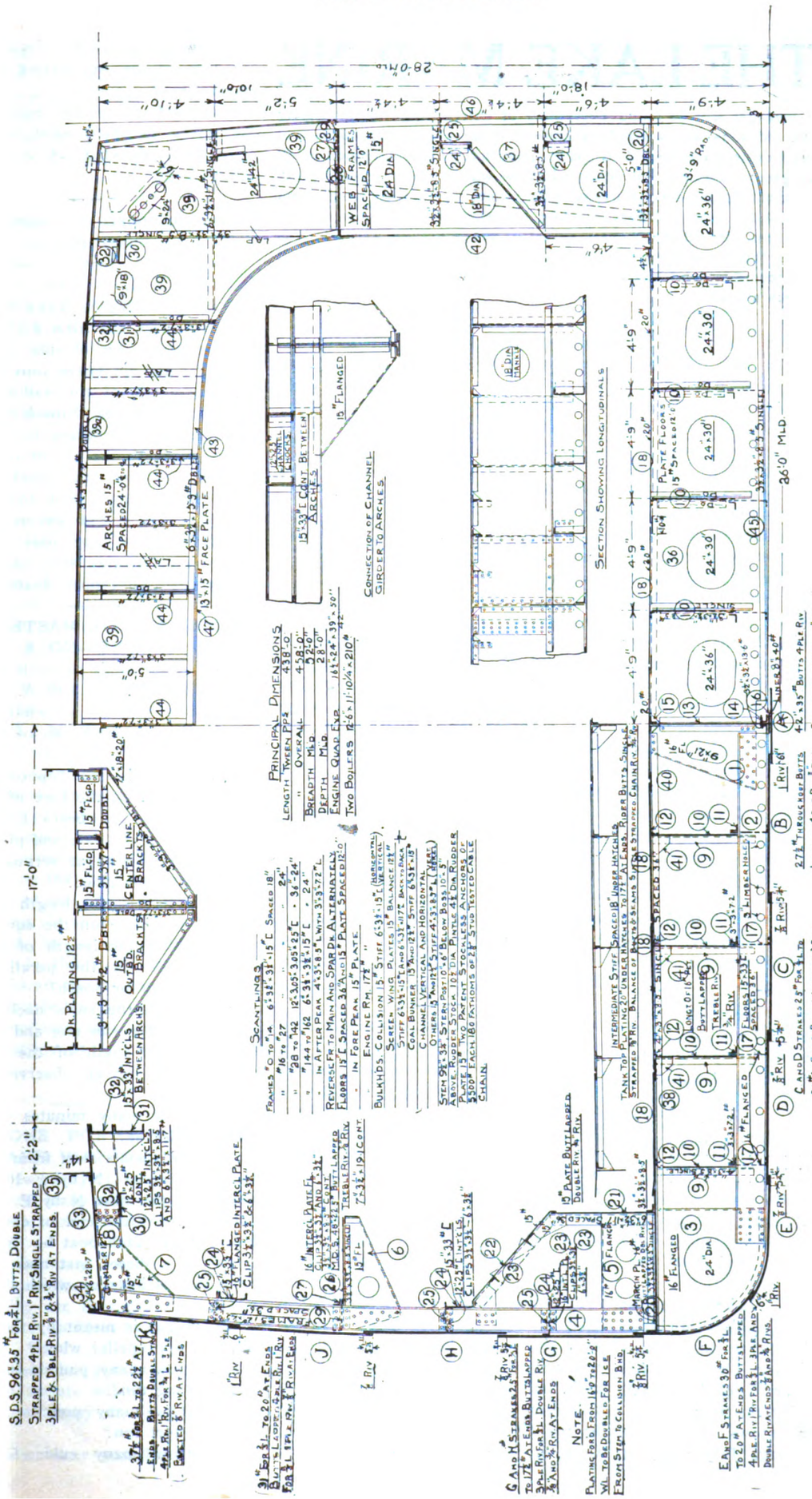
Up to the above date, July 8, 1902, no steamer of any size, say over 2,000 tons register had ever been built without hold beams or pillars. Now no lake built vessels for cargo are constructed with hold beams or pillars and it seems that even since 1902 these obstructions are being omitted in foreign built vessels.

Mr. Oldham was certainly far seeing on this point.

The work of constructing the last stretch of the canal between St. Augustine and Jacksonville, Fla., is being pushed by the officials of the Florida Coast Line Canal & Transportation Co. The company has five powerful dredges and excavators at work on this final section of a great inland waterway.

Rear Admiral W. T. Swinburne succeeded Rear Admiral James H. Dayton as commander-in-chief of the Pacific fleet July 31. The change took place aboard the flagship West Virginia and was attended by the usual ceremonies. Admiral Dayton left at once for Washington.

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN


PRINCIPAL DIMENSIONS
LENGTH BTWEEN PPS 438'-0"
" OVERALL 458'-0"
BREADTH MLD 52'-0"
DEPTH MLD 28'-0"
ENGINE QUAD EXP 161'-24"-39"-50"
TWO BOILERS 12'-6"-11'-10¼"-210"
SECTION SHOWING LONGITUDINALS
CONNECTION OF CHANNEL GIRDER TO ARCHES
SCANTLINGS
NOTE.
S.D.S. 96-35" FOR 1L BUTTS DOUBLE
STRAPPED 4 PLE RIV. 1" RIV SINGLE STRAPPED
3 PLE & DBLE RIV 7/8 & 3/4 RIV AT ENDS.
DK PLATING 12½"
ARCHES 15" SPACED 24"-0"
WEB FRAMES SPACED 12'0" 18"
24 DIA
24"-36"
24"-30"
PLATE FLOORS 15" SPACED 12'0"
26'-0" MLD
28'-0" MLD
18'-0"
10'-0"
5'-2"
4'-10"
4'-9"
4'-6"
4'-4½"
4'-2"
4'-0"
3'-9" RAD
5'-0"
17'-0"
2'-2"
ENGINE RM 174"
BULKHDS. COLLISION 15" STIFF 6-33-15" C (VERTICAL).
SCREEN WING PLATES 15" BALANCE 12½"
STIFF 6-33-15" C AND 6-33-15" C + 24"
COAL BUNKER 13" AND 12½" STIFF 6-33-15" C
CHANNEL VERTICAL AND HORIZONTAL
OTHERS 13" AND 12" STIFF 4-33-13" C (LIGHT).
STEM 9½" 38" SERIES POSITIVE 16" BELOW BALLAST
ARMD. 38" SERIES POSITIVE 16" BELOW BALLAST
PLATE 13" TWO PATENT STOCKLESS ANCHORS OF
2500# EACH 180 FATHOMS OF 2¼" STUD TESTED CABLE
CHAIN.
FRAMES "0 TO "14 6-32"-31"-15" C SPACED 18"
" "16 TO "27 " " " 24"
" "28 TO "142 12"-30"-30"-25" C + 36"-24"
" "144 TO "162 6"-34"-34"-15" C + 24"
" IN AFTER PEAK 4"-33"-8 3/8" LWTH 3"-33"-22½"
REVERSED PR TO MAIN AND SPAR DK ALTERNATELY
FLOORS 13" C SPACED 36" AND 15" PLATE SPACED 12'0"
" IN FORE PEAK 15" PLATE
ENGINE RM 174"
TANK TOP PLATING 20" UNDER HATCHES TO 7/8 AT ENDS. RIDER BUTTS SINGLE STRAPPED 3/4 RIV. BALANCE OF BOTTOM AND SIDES STRAPPED 7/8 RIV.
INTERMEDIATE STIFF SPACED 18" UNDER HATCHES
16" FLANGED
15" PLATE BUTT LAPPED DOUBLE END 3/4 RIV.
15" FLANGED
MARGIN PLATE 24" 38" SERIES POSITIVE
31"-33"-82"
SPACED 31"
SPACED 36"
SPACED 30"
SPACED 24"
SPACED 18"
SPACED 12"
SPACED 9"
SPACED 6"
SPACED 3"
24" DIA
18" DIA MANH.
16" FLANGED
15" FLANGED
12½" FLANGED
12" FLANGED
9" FLANGED
6" FLANGED
3" FLANGED
24"-36"
24"-30"
24"-24"
24"-22"
24"-20"
24"-18"
24"-16"
24"-14"
24"-12"
24"-10"
24"-8"
24"-6"
24"-4"
24"-3"
24"-2"
24"-1"
24"-0"
A RIV 6"
B 1 RIV 6"
C 7/8 RIV 5¾"
D 7/8 RIV 5¾"
E 7/8 RIV 5¾"
F 1 RIV
G 1 RIV
H 1 RIV
J 7/8 RIV
K 1 RIV
27½" THROUGHOUT BUTTS 4-PLE RIV. LAPPED 4-PLE RIV & RIVS. 3-PLE RIV AT ENDS.
2-8" AT ENDS BUTTS LAPPED 3 PLE RIV & RIVS. 4-PLE RIV FOR 3L. DBLE RIV 8" AND 7/8 RIV AT ENDS.
C AND D STRAKES 22" FOR 1L IN.
31" FOR 1L TO 26'0" AT ENDS BUTTS LAPPED 3-PLE RIV FOR 3L. DOUBLE RIV 7/8 AND 3/4 RIV AT ENDS
G AND H STRAKES 23" FOR 3L TO 17½" AT ENDS BUTTS LAPPED 3-PLE RIV FOR 3L. DOUBLE RIV 7/8 AND 3/4 RIV AT ENDS
E AND F STRAKES 30" FOR 3L TO 20'0" AT ENDS BUTTS LAPPED 4-PLE RIV 1" RIV FOR 3L. 3-PLE AND DOUBLE RIV AT ENDS 7/8 AND 3/4 RIVS.
37½" FOR 3L TO 22'6" AT ENDS BUTTS DOUBLE STRAPPED 4-PLE RIV 1" RIV FOR 4L. 3-PLE RIV FOR 3L. 1-PLE RIV 7/8 RIV AT ENDS
31" FOR 3L TO 20'0" AT ENDS BUTTS LAPPED 3-PLE RIV FOR 3L. 1-PLE RIV 7/8 RIV AT ENDS
NOTE.
PLATING FORD FROM 16'0" TO 20'0" WL TO BE DOUBLED FOR 16'0" FROM STEM TO COLLISION BHD.

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

FOR THE LAKE MARINE

In this department hereafter will be found everything of current interest pertaining to Lake Navigation. Masters are advised to consult it weekly for information of interest to them; and owners are invited to use it freely for the promulgation of all announcements of a general nature. The Marine Review will be placed aboard every vessel having membership in the Lake Carriers' Association, representing a registered tonnage of nearly 2,000,000 tons, and can, therefore, be depended upon as a reliable courier to the entire fleet. It will reach every vessel in active service weekly. It is the intention to make this department complete so that at the end of the year it will be an authentic record which should prove of permanent and increasing value to owners and masters alike.

WEST NEEBISH CHANNEL.

The opening of the new West Neebish channel has been delayed but according to the present program it will be opened on Saturday next. Ten of the leading masters of the lakes have been at the Neebish for several days past and will act as pilots until the new channel is well understood by masters in general. The masters who will serve in that capacity are: Captains W. W. Smith and John Lowe, of the Pittsburg Steamship Co.; Capt. George B. Mallory, of Pickands, Mather & Co.; Capt. J. M. Johnston, of the Cleveland-Cliffs Iron Co.; Capt. Charles B. Galton, of the Mitchell fleet; Capt. John W. Duddleson of H. H. Brown & Co.; Capt O. J. Soleau, of the Hawgood fleet; Capt. Pierre Bouille, of the Gilchrist fleet; Capt. C. H. Francke, of the Wilson Transit Co., and Capt. James Fleck, of the Lake Transit Co. George A. Marr, secretary of the Lake Carriers' Association, will represent the vessel owners.

The opening of the channel will be under the direct supervision of Col. Charles McD. Townsend.

JULY LAKE LEVELS.

The United States Lake Survey reports the stages of the Great Lakes for the month of July, as follows:

Lakes—	Feet above tide water New York.
Superior	602.89
Michigan-Huron	581.79
Erie	573.33
Ontario	248.34

Since last month, Lake Superior has risen 3¼ in., Lakes Michigan and Huron have risen 2¼ in., while Lake Erie has fallen 2 in., and Lake Ontario 3¼ in.

During August, Lake Superior should rise 1¾ in. Lakes Michigan and Huron are balancing on the seasonal crest, and are likely to fall half an inch. Lake Erie should fall 2 in. and Lake Ontario 3 in.

Lake Superior shows a normal height, at the average July stage of the past 10 years, and practically the same as in July, 1906. It is 13½ in. higher than in 1892, and 2¼ in. higher than last year; but it is lower by an inch than in 1905, and lower by 3 in. than in 1903.

Lakes Michigan and Huron show the highest July stage since 1888, when the water was half a foot higher. They are 8 in. above the average July stage of the past 10 years, 2¾ in. higher than last year, and 22¾ in. higher than in 1896; but in 1886 the water was higher by 19¾ in.

Lake Erie is a trifle higher than in July last year, but an inch lower than in 1904, and half an inch lower than in 1892. It is 7 in. above the mean July stage of the past 10 years, and 22½ in. higher than in 1895. It is, however, 13 in. lower than in 1876, and 10 in. lower than in 1883.

Lake Ontario shows the highest July stage in 32 years, the lake in 1876 having been a trifle higher. In 1870 it was a trifle lower. In 1862 it was 3½ in. higher. It is 22¾ in. above the average July stage of the past 10 years, and 45 in. higher than in 1895, 3½ in. higher than in 1886, and 5½ in. higher than in 1904.

WRECK AND SHOAL OFF INDIANA HARBOR, LAKE MICHIGAN.

The United States Lake Survey steamer Search, which is engaged in sweeping the south end of Lake Michigan, reports the discovery of a wreck lying in 42 ft. of water, 6⅜ miles N. 70° 30′ E. (azimuth 70° 30′) from South Chicago breakwater lighthouse, and 8 miles N. 21° 45′ E. (azimuth 21° 45′) from the furnace stack of the Inland Steel Co. at Indiana Harbor.

At present high stage of Lake Michigan there is not over 22 ft. of water over the wreck, and at standard low water about 18½ ft. As this wreck is eight miles out in the lake, and directly on the track of the heavy traffic for Chicago, Indiana Harbor, and Gary, it is a dangerous menace.

The wreck is believed locally to be the hull of the five-masted schooner David Dows.

About 800 ft. to the southwest of the wreck, a small sand shoal was discovered, showing 24 ft. at low-water stage.

MASTERS CAUTIONED TO AVOID STRIKING SURVEY BUOYS.

The United States Lake Survey steamer Col. J. L. Lusk is sweeping the vessel tracks in Lake Huron in the vicinity of the Straits. To locate the surveys, a line of spar buoys displaying flags and brush tops has been set out north of the sailing course off Cordwood and Nine-Mile points.

Masters are requested to assist the survey work to the extent of keeping a sharp lookout to avoid running down these buoys, and to give the survey steamer and sweep right-of-way. Steamers may pass over the sweep wire in the 100-ft. spaces between any two copper floats.

QUESTIONS FOR MASTERS AND MATES.—NO. 8.

116. If the sun's azimuth (bearing) is N 115° 15′ E at 8:10 A. M. for a given date and place, what will its bearing be at 3:50 P. M. of the same date?

117. What is the "opposite" time of 7:50 A. M. on the face of a clock?

118. If the sun bears E by S at rising for a given date and place, what will its bearing be at setting for the same date and place?

119. What is the length of a degree of longitude on the equator?

120. What the length of a degree of longitude on the parallel of 60 degrees north or south?

121. When the sun's declination is south, does the sun rise and set bearing north or south of the east and west points, for an observer on the lakes?

122. How many minutes of arc in 0.6 of a degree?

123. Two boats start from the same point, one steers N by E 100 statute miles, and the other N by E 100 nautical miles. At the end of each course how far will each boat be (in its own miles) in a direct east and west line from the meridian on which they started?

124. What is meant by the lead or pitch of a propeller wheel?

125. How many pounds in a gross ton, or long ton?

126. How many pounds in a net ton, or short ton?

127. How many cubic feet in a

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

marine ton, such as in figuring the tonnage of a vessel?

128. How many cubic feet in a ton of hard coal?

129. Why is it that a vessel carries more tons than her cargo space calls for, or either her net or gross tonnage?

130. What is a safety curve on a chart? What is it used for?

ANSWERS TO QUESTIONS FOR MASTERS AND MATES.—NO. 8.

116. N 115° 15′ W or S 64° 45′ W.

117. 4 hrs. 10 min. P. M.

118. W x S.

119. 60 nautical miles.

120. 30 nautical.

121. South.

122. 36′ of arc.

123. 19.6 miles.

124. The distance it would advance in a solid substance in one revolution, like turning a nut once around on a thread, or the distance, measured in the direction of the axis of the shaft, between any point of the propeller and the same point after completing one revolution.

125. 2,240 lbs.

126. 2,000 lbs.

127. 100 cubic feet.

128. 37.7 cu. ft.

129. In figuring the tonnage of a vessel, marine tons of 100 cu. ft. are used and ordinary cargo does not occupy so much space.

130. A continuous line drawn or laid down on the chart passing through soundings of the same depth. A ship approaching the shore in thick weather is enabled, by taking soundings, to keep outside this curve and in deep water or locate her position by its use. It may also be an arc of a circle that entirely encloses any danger to navigation, outside of which one is perfectly safe.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

571. How many ft. in 145 fathoms?

572. How many fathoms in 180 ft.?

573. How many marks on the hand lead line?

574. How many deeps?

575. Name the marks?

576. Why are they called marks?

577. Is 6 fathoms a mark or a deep?

578. How do you turn nautical miles into statute miles?

579. How many ft. in a nautical mile?

580. How many pounds in a short ton?

ANSWERS.

561. About midway between Sturgeon Bay Canal and Manistee. The depth is 145 fathoms.

562. 581 ft.

563. South Chicago, Chicago, Kenosha, Racine, Milwaukee, Port Washington, Sheboygan, Manitowoc, Two Rivers, Kewaunee, Ahnapee and Sturgeon Bay Canal.

564. Waukegan.

565. Portage Lake, Manistee, Ludington, St. Joseph.

566. True E and W.

567. W ¼ S and E ¼ N.

568. W ¼ S.

569. E ¼ N.

570. Anything east of N E.

COMMERCE OF LAKE SUPERIOR.

The report of the superintendent of Sault Ste. Marie canal shows that 13,090,474 tons of freight have been moved through the canal up to Aug. 1 of the present year as against 24,981,555 tons moved to Aug. 1 of last year, a decrease of 11,891,081 tons. During July 7,088,149 tons were moved through the canal as against 7,193,236 tons during July, 1907, a loss of only 105,087 tons. It will be understood however that the fleet was practically tied up two weeks of July, 1907, through the mining strike in the iron country. The normal movement for July of that year would have been approximately 9,000,000 tons as 8,865,442 tons were moved in June, 1907. The July movement of the present year, however, is not to be sneezed at as it proves conclusively what the available fleet could do were trade offering. The summary follows:

PROPOSES TO BUILD DRY DOCK.

The Canadian Ship Building Co. proposes to build a dry dock at its Bridgeburg yard and to hereafter concentrate its business there. It is therefore offering for sale the plant and stores of its Toronto yard. The plant is inventoried at $61,891 and the general stores including steel, rivets, bar iron and lumber at $21,000.

An experiment is now being made at Conneaut to enable masters to enter the harbor in smoky weather when the wind is blowing off the land. A high power searchlight has been installed on one of the Hulett unloaders and will be automatically operated to throw a vertical light which it is expected will be seen above the smoke altitude. If it proves successful a similar device will be installed at Gary and South Chicago.

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

Items—	To Aug. 1, 1908.	To Aug. 1, 1907.	To Aug. 1, 1906.
Coal, anthracite, net tons	643,633	632,335	321,857
Coal, bituminous, net tons	3,225,818	4,880,486	3,248,505
Iron ore, net tons	7,106,322	16,364,443	16,018,806
Wheat, barrels	27,846,529	41,117,902	26,290,985
Flour, barrels	1,714,693	2,314,410	2,230,604

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR FROM OPENING OF NAVIGATION TO AUG. 1 OF EACH YEAR FOR THREE YEARS PAST.

EASTBOUND.

Items—	To Aug. 1, 1908.	To Aug. 1, 1907.	To Aug. 1, 1906.
Copper, net tons	35,960	35,291	52,657
Grain, other than wheat, bushels	11,241,349	20,310,169	22,788,941
Building stone, net tons	577	100	640
Flour, barrels	1,714,693	2,314,419	2,230,370
Iron ore, net tons	7,106,322	16,364,443	16,018,806
Iron, pig, net tons	7,620	9,271	14,215
Lumber, M. ft. B. M.	182,792	317,826	429,285
Wheat, bushels	27,846,529	41,117,902	26,290,985
Unclassified freight, net tons	36,643	42,142	74,149
Passengers, number	12,196	15,922	12,456

WESTBOUND.

Coal, anthracite, net tons	643,633	632,335	321,857
Coal, bituminous, net tons	3,225,818	4,880,486	3,248,505
Flour, barrels	265	.....	234
Grain, bushels	700	.....	6,749
Manufactured iron, net tons	113,435	131,210	172,420
Salt, barrels	261,978	194,400	207,673
Unclassified freight, net tons	308,737	402,227	449,050
Passengers, number	12,975	15,814	14,233

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

Items—	To Aug. 1, 1908.	To Aug. 1, 1907.	To Aug. 1, 1906.
Eastbound freight of all kinds, net tons	8,759,790	18,906,348	18,386,401
Westbound freight of all kinds, net tons	4,330,684	6,075,207	4,224,150
Total freight	13,090,474	24,981,555	22,610,551

Total number of passages to Aug. 1, 1908, was 5,841, and the net registered tonnage, 9,914,308.

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE INTERRELATION OF THEORY AND PRACTICE OF SHIP BUILDING.*

BY J. J. O'NEILL.

In preparing this paper it has been found necessary to restrict its scope to the examination of the speed power aspect of the question. Some years ago, while engaged in plotting curves of power, the character of the residuary resistance curve impelled the conclusion that, in developing dimensions of vessels, the wave-making resistance decreased so rapidly that it was felt a period was reached when it became constant for a time, only to increase at a later stage when the vessels were still further enlarged. The relation of the wave-making resistance to skin friction was also interesting. In extending the length, a time came when the skin and wave-making resistance became equal, further extension revealing the fact that skin friction increased at a more rapid rate than decrease of wave-making resistance, inviting the belief that increased length did not secure the advantages commonly held as appertaining to it; that, in fact, it became disadvantageous to increase length beyond a certain limit, or, rather, that equal speed power results would be obtained by attention to the other dimensions. Colonel Rota, in the Italian experimental tank, further illumined the matter in a series of researches, which were generously given to the profession. He took a particular model and modified successively, in constant ratio, one of the dimensions, length, breadth, and immersion, leaving in each derived form the two other dimensions invariable. Twelve models were tried in three series. First, the breadth and depth constant and length varying; secondly, the length and depth constant and breadth varying; thirdly, length and breadth constant and depth varying—the only drawback to the procedure being that surface and displacement in the various models changed. His deductions were that:

(1) The increase or decrease of breadth or depth produces an increase or decrease of E. H. P. at the same speed.

(2) With the same variation of displacement the E. H. P. is greatest when the breadth rather than the depth varies.

(3) Skin friction remains the same when the displacement is constant whether the breadth or depth varies.

(4) Increase of length produces a marked decrease of resistance due to the formation of waves, but, on the other hand, comparatively to the increase of the other two dimensions, a rapid increase of skin resistance.

(5) Each derived vessel, in changing the longitudinal dimension, possesses a particular speed for which increase or decrease of displacement, within ordinary limits, does not produce at the same speed practically any notable variation of power.

The corollaries from the fourth deduction, taken in conjunction with the curves, appear to be that a period comes when increase of length after a time does not secure an appreciable reduction of wave-making resistance, and that the principal resistance is due to skin friction; hence, the only advantage accruing to the longer and heavier vessel is explained by the latter resistance increasing at a lesser rate than dimension. The fifth deduction also implies that varying displacements can secure equal speeds with equal powers.

The wave-making reductions are great as the displacement is augmented, the resistance at small displacement being very much greater than the skin resistance, and the latter at the higher displacement becomes of major importance. The character of the E. H. P. curves also indicate that dissimilar displacements are driven at equal rates with the same power. At 20 knots the wave resistance curve rises to a period of comparative uniformity before ascending rapidly at the higher displacements to its maximum. A period, however, apparently arrives when wave augmentation ceases, permitting increased displacements to secure constant speed without increase of power. This period is specially valuable to the ship owner, enabling greater carrying capacity to be obtained without increased first cost and upkeep of machinery and coal consumption. Following out the previous idea respecting the behavior of Rota's surves when extended, these forms have been enlarged to the displacement of 37,000 tons, and Figs. 1, 2 and 3 give the E. H. P. for skin and wave-making resistance at various high speeds, showing their relation to each other. Here, in Fig. 1, vessel 2, the skin and wave-making resistance curves if produced would be equal at about 18 knots, and again at about 30¼ knots, so that between these limits the skin friction is the principal resistance to be overcome, and is at about 24 knots, twice that of the wave-making resistance.

With regard to vessel 3, on examining the wave-making resistance curve, it will be noticed that at from 24 to 30 knots it bears a very minor proportion of the total resistance, and at, say, 20 knots, is at a minimum. The power introduced into the vessel, therefore, in this case is used principally to overcome skin friction, which, as is well known, depends on surface and not on form; reduction of length appears, therefore, to be desirable.

Curve for vessel 4 presents similar features to that of vessel 3, but more pronounced, wave-making resistance being a minimum at about 24 knots. The difference of E. H. P. required for vessels 3 and 4 from about 26 to 28 knots is about 300, the E. H. P. at 26 knots being for vessel 4 just 30,000. In these three cases the ratio of depth to breadth has been constant, with length and breadth varying. Elongation has been effected without change of form, or redistribution of displacement longitudinally, which, as is known, affects resistance. The practical realization of the preponderating influence of skin resistance here presented is manifested by the appearance on the Atlantic of such vessels as Baltic and Adriatic, Cedric and Celtic, Saxonia and Ivernia, and Carpathia, Sylvania and Slavonia, of large displacement and length at relatively very slow speeds, disclosing, at the same time, the fact that absence of the necessary power prevents the attainment of the speed their lengths demand. Incidentally, it may be remarked that in these slower ships it seemingly was thought better to have earning capacity, in the shape of constantly changing cargo, than power represented by constant and permanent machinery weight, with decreased cost of upkeep and coal consumption. At the same time the dimensions permit of extensive passenger accommodation. In these cases it is quite evident that speed was not the primary factor of the design; but weight, cargo and passenger facilities, while stability considerations determined dimensions, which involved speed as being purely incidental. Its primary character, therefore, was temporarily lost, only to be regained in the same vessel when desired by the necessary introduction of the weight to secure the power demanded for its attainment, possibly, but not necessarily, at the expense of cargo capacity.

These vessels also appear to confirm the experimental results given by Mr. Johns in his last paper read before the Institution of Naval Architects.

*Institution of Engineers and Ship Builders in Scotland.

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

It was shown that in vessels whose lengths were twice the square of the speed, residuary resistance is constant for a variation of form, represented by a range of prismatic coefficient of 20 per cent. In other words, surface being constant, between the limits of 50 per cent and 70 per cent prismatic coefficient, variation of form permits of equal speeds being secured with equal powers. Form, in these cases apparently, has no influence on the results.

Curves 5, 6, 7 and 8, Fig. 2, are for vessels of the characteristics indicated. They show the effect of disposing displacement breadthwise. Vessel 6 was the basis vessel, the ratio of depth to length in vessels 2, 4 and 5 being the same as vessel 6, the breadth depth ratio varying, and length con-

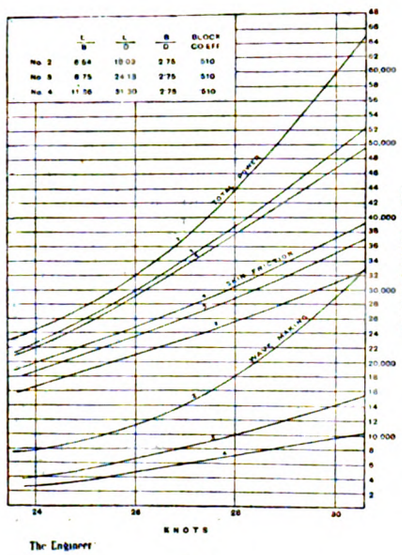


Fig. 1

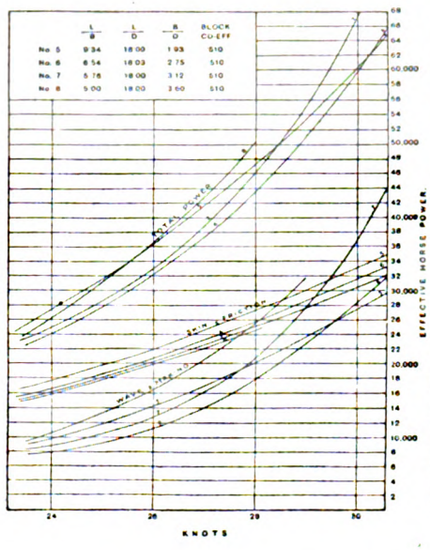


Fig. 2

E.H.P. FOR SKIN AND WAVE MAKING RESISTANCE

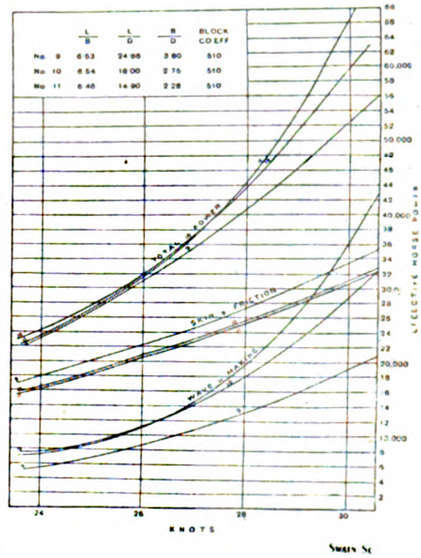


Fig. 3

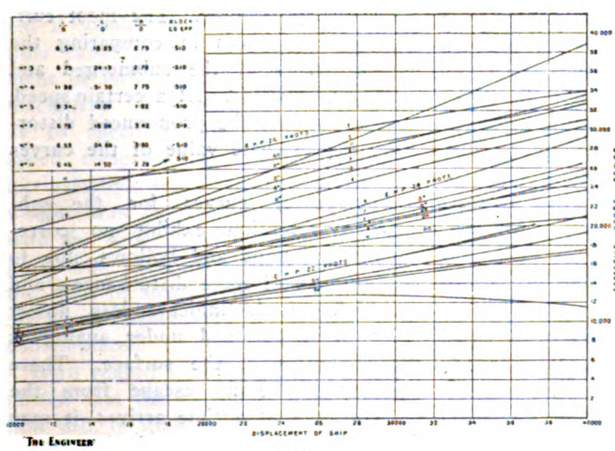


Fig. 4

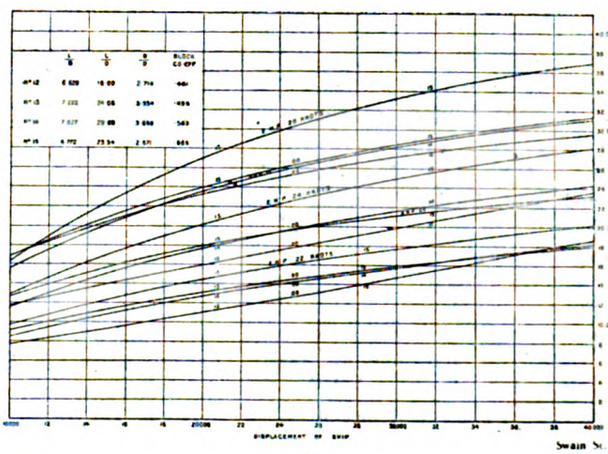


Fig. 5

E.H.P. FOR GIVEN SPEEDS AND DISPLACEMENTS

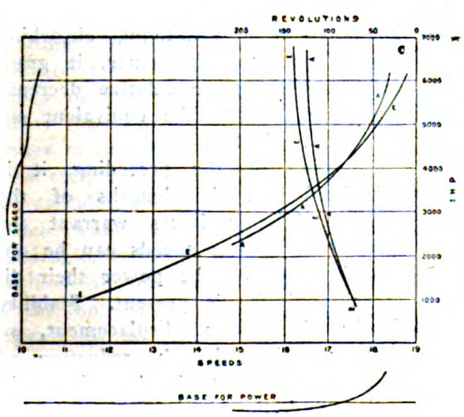


Fig. 6

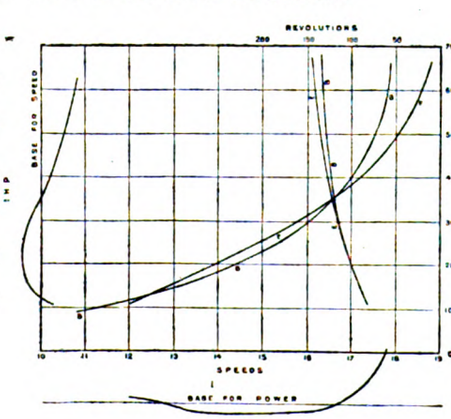


Fig. 7

PROPELLER EFFECTS

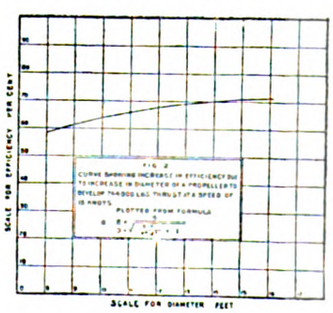


Fig. 8—IDEAL EFFICIENCY

Generated on 2024-08-28 16:14 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

stantly decreasing, thereby reducing skin friction but increasing wave-making resistance.

This illustrates the handicap war vessels labor under on speed grounds, owing to their inability to carry armament and protection high up, without increasing beam to secure stability, the length being fixed. The importance of this factor of stability increases so as to become almost the most vital. To attain certain results, it becomes imperative to divide the power into twin and triple engines with relatively smaller screws running at high rates, reducing thereby the weight of machinery, to realize conditions of speed. No such limitations of dimensions restrict the designer of merchant vessels, excepting in the case of the present type of liner, having seven or eight decks, with superstructures, where stability becomes increasingly difficult to secure, making this factor the controlling element of the combination.

Curves 9, 10 and 11, Fig. 3, show the effect of redistribution of displacement depthwise. The ratio of breadth to length is constant. Vessels 5 and 7, Fig. 2. are identical in length to vessels 9 and 11—the breadth-depth ratio varying. Clearly, on comparison, this is the most desirable manner of disposing displacement. It is along these lines that the merchant navy has broadly developed.

Curves of E. H. P. for wave-making, and skin friction separately and combined for these vessels, plotted to a basis of displacement, reveal the same general characteristics and confirm the previous researches. A study of these curves invites the conclusion, with regard to wave-making resistance, that there is a period in the growth of displacement when it is the least possible. Further, the curves show a diminution of power between displacements wide apart, and that dissimilar displacements can be driven with equal speeds by equal powers. It is this region that invites attention, the gleanings of which will be found worthy of the reaping, and an abundant harvest gathered.

Figs. 4 and 5 show curves of E. H. P. at the speeds corresponding to the various displacements. Those on Fig. 5 represent actual vessels, on the assumption of 50 per cent propulsive efficiency, as stated by Mr. Froude to be war practice generally. Table I gives the various powers required for the speeds at the various displacements enumerated. They cover a very wide range, and are extremely instructive. The following data for some high-speed Atlantic liners have been gleaned from various sources:

TABLE II.

	L/B.	L/D.	B/D.	Displacement in tons.	Speed in knots.	I. H. P.
Campania	9.23	24.00	2.6	18,000	22.0	30,000
Kaiser Wilhelm Der Grosse	9.47	22.32	2.35	20,880	22.8	32,000
Deutschland	9.9	22.86	2.31	23,620	23.5	36,000
Kaiser Wilhelm Der Zweite	9.42	23.00	2.44	26,500	23.5	39,000
Lusitania and Mauretania	8.69	32.38	2.7	36,840	25.0	68,000

In comparing these steamers with the corresponding experimental ones, it must be remembered that great latitude is permissible in determining dimension to secure equal results, since, providing sectional area and water line form be maintained, great variation of character of midship section is possible, as Mr. Froude's researches clearly establish. Care must be taken that the longitudinal distribution of displacement be unchanged, as experiment shows that, dimensions and block coefficient remaining constant, redistribution longitudinally considerably affects wave-making resistance. With this restriction the data given are very flexible and capable of wide application.

Referring to Table I, compare vessel 15, of practically similar characteristics, with the Lusitania and Mauretania at 25 knots. The results are identical. The vessel from which No. 15 is derived was fitted with slow-running reciprocating engines, and the latter with up-to-date turbine machinery; the propelling efficiency here appears to be no greater and may be less than the 50 per cent of tradition. This is also borne out in other instances where reciprocating machinery and turbines, in similar vessels, secured the varying speeds with equal powers up to 25 knots. Afterwards the turbine seemed to gain.

It may be remarked that the character of the lines of No. 15 and the recent Cunarders bear no resemblance to each other. The former are straight and the latter hollow. Other Atlantic liners, known to the writer, also have wide divergence of form, yet, with equal surfaces, secure equal speeds with equal powers. Wide variations of form also can be found on similar dimensions in channel steamers, with similar results. More research work in various types is certainly necessary before definite statements can be made on the value of form.

The results of comparison between the Campania and later German vessels show that no great advance has been made propulsively for over a decade, but has followed traditional lines, the increased speed being attributable to increased dimensions merely.

Since the preparation of this paper further light has been thrown on the question of wave-making resistance by a contribution to the "Proceedings" of the American Society of Naval Architects and Marine Engineers, New York. In dealing with the problem of "Submarines of Battleship Speeds," Mr. Chase prepared a model which was run at varying speeds in the experimental tank at Washington, both on the surface and at different depths of submergence.

Curves of E. H. P. were obtained, after correction for skin friction, for vessels increasing from 100 ft. to 200 ft. in length, and from 5 to 18 knots speed. At certain high speeds the usual humps and hollows appeared, confirming the belief that on indefinite enlargement these distortions would be similarly periodic. The most curious phase appears in comparing the power curves of the submerged and surface conditions. At a certain speed, just succeeding the pronounced distortion, the ordinate value of the curves coincide.

The power curves for the submerged condition exhibit no corresponding humps and hollows, due to the absence of wave disturbances, and at high speeds indicate less power than those obtained under analogous circumstances at the surface. There appears to be no escape from the conclusion that a time arrives, it may be on commencement of the movement of a ship, when a wave comes into existence, and after developing intensity to a maximum, absorbing power for its maintenance, it gradually diminishes on relative decrease of power, due to the equivalent enlargement of ship.

Summing up the preceding, it is submitted that the lengths of the present Atlantic liners warrant the belief that greater speeds can be obtained, providing the power their dimensions invite is present. Stability finally determines displacement, so that, on given length, reduction of displacement makes for both its realization and the attainment of speed, the two being closely interrelated.

The curves of power also show that

Generated on 2024-08-28 16:16 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the present speeds can be attained on shorter lengths, and that the variations of form involve relatively small gains. Is this, then, to be the end? Cannot practice bridge over the gulf separating it from theory? On closer inquiry the limiting cause appears to be the machinery end of the combination, demanding for the realization of power to attain the desired speed results, such weights as to adversely influence the reduction of the dimensions of ships the speed invites. Generally speaking, it has hitherto been thought the easiest and cheapest way to secure speed economically by increased dimension of hull rather than the character of the machinery. Running machinery at 80 revolutions as the maximum appeared the limit experience warranted. The quick-rotating reciprocating machinery of the royal navy at twice the speed, with its weight inversely as the revolutions, with all its possibilities, or even a compromise, was deemed unworthy of adoption in the merchant marine, owing to its cost and want of endurance. This latter may be true, but the former cannot be demonstrated. Total cost may be divided between hull and machinery, and had curves been plotted it would have been found that a time came when, instead of enlargement of hull, increase of character of machinery secured greater economy as to speed results; and the high-speed reciprocating engine, although intrinsically more costly, when its weight was considered and compared with the slow, heavy reciprocating engine, was cheaper, power for power, the total of small hull and high-speed machinery being very much less than contemplated.

With regard to endurance, it is submitted that the exigency of the situation will, in time, force another condition into the problem, viz., the length of life of hull and machinery. The demand for increasing high speed will continue inevitably, so that it will be a matter for consideration whether the policy of building ships for posterity rather than the immediate future continues to be advisable. Long ago the slow reciprocating engine, with its single cylinder, succumbed to the double, which was followed by the triple, quadruple, and even quintuple cylinder engines—all tending to economy—until the limit of the close cycle process appears to be reached, bringing into existence by natural and gradual stages the open process, the machine par excellence—the marine turbine. This should, in a large measure, lessen the gap between navy and merchant practice, and finally dispose of the arguments of endurance against the high rotating machinery, as it is universally admitted that the efficiency of the turbine, per se, depends principally on its high speed of rotation. In examining the curves of power, some of which represent vessels fitted with turbine machinery, it is found that up to 25 knots the turbine secures no advantage propulsively over the relatively slow reciprocating engine of the merchant marine, although running at twice its rate; nor yet over the high-speed reciprocating engine of war practice under like conditions. Even in torpedo boat destroyers, with usual powers, and running at a still greater ratio of rotation, no perceptible increase of efficiency is observed. In this connection it may be well to state that the principal advantage claimed for the new machine is "its capability of securing greater power on a given weight of machinery than any other marine contrivance known," and further, "in applying turbines to marine propulsion, it is not a question of securing a greater propulsive efficiency, but to determine the most suitable design and arrangement of propellers and turbine, in order that their combined efficiency may be at least as good as it is with ordinary reciprocating machinery." This is borne out by experience. It has not hitherto obtained increased efficiency of propulsion, although the Hon. C. A. Parsons, in his paper of 1907, states: "That not only does weight diminish, but efficiency also increases, by approaching the higher limit of revolution; and increased revolutions are also desirable, permitting smaller dimensions, adding both to the mechanical perfection and efficiency of the turbine. There is also for given speed, horsepower, and efficiency, very little variation in the weight of mercantile or naval turbines. Smaller steam consumption is also claimed, and a further decreased weight of installation in consequence; reduction of space occupied, also of propeller diameter, permitting for same draught increased immersion and preventing racing." Its chief function, however, at present apparently is its capability to obtain greater powers on a given weight than its competitors. Two special instances may be quoted bearing on this aspect of the case. The torpedo boat destroyer Viper, fitted with turbines, of similar dimensions to destroyers equipped with high-speed reciprocating engines, realized 37.9 knots, with 13,000 I. H. P., and 1,180 revolutions on 73 tons weight; against its reciprocating competitors of 30 knots with 6,000 I. H. P., and 450 revolutions, on 80 tons. There is, however, another side to this achievement involving ship design. The vessel's form evidently permitted this excess of speed to be obtained on practically the same displacement, owing entirely to the presence of increased power, and this with the high rotation of screw, without encountering serious cavitation. Conversely, it may be argued that had speed as well as displacement been constant, increased fulness of vessel would have secured augmented sea qualities and enlarged space, so very desirable in this class of boat. Again, in the Amethyst and Topaze, whose performances are now becoming historic, the machinery weights apparently were equal, for some unexplained reason, but the turbine-driven vessel secured 14,000 I. H. P. against the 10,000 I. H. P. of the reciprocating one. These figures show the possibilities, still remembering that no increased propulsive efficiency is claimed. These vessels cannot be taken as types for, say, the Atlantic passenger trade, but it is still urged "that at higher powers better economy will be reached, and that at least 10 per cent reduction of weight can be secured in large vessels. With reduced steam consumption, greater power will be obtained from the same weight, or the same power with less weight and coal supply." These are claims made by responsible persons. The possibilities of the future, therefore, considerably widen the vista of engineering practice; for it is at least established that the weight of turbine machinery is equal in the two services, and that the efficiency of the high sped reciprocating engine has been reached, with the endurance it apparently lacked.

Attention is now drawn to Figs. 6 and 7, which graphically show the happenings to performance when the screw propeller receives the attention it deserves.

The characteristics of these propellers are as follows:

TABLE III.

	Diameter.	Pitch.	Pitch ratio.	Developed area.	Dev. area. / Disc. area.
A..	12.5	15.75	1.26	52	.333
E..	13.0	16.50	1.27	49	.290

A comparison of these results with those of Constructor Taylor's experiments given in the American "Transactions" shows that at the slips observed, viz.: A, 7 per cent, 8¾ per cent, and 11 per cent at 15, 17½ and 18 knots respectively, the efficiencies were, 77 per cent, 78 per cent and 78 per cent or the maximum possible;

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

E = 9 per cent, 11½ per cent, and 13 per cent slips at the same speeds as A—74¾ per cent, 77¾ per cent and 78¼ per cent respectively. There is therefore very little to choose between these propellers on efficiency grounds, and one must assume that with 20 per cent increased speed of rotation, permitted by the reduction of area, enabled half a knot extra speed to be obtained; or taking the speed at 18 knots, a saving of 8 per cent of power. In these trials of actual screws, the displacement and trim and general conditions were the same.

Compare B with E of same pitch, but different diameter.

TABLE IV.

	Diameter.	Pitch.	Pitch area.	Developed area.	Dev. area. / Disc. area.
B..	12.5	16.5	1.32	47	.301
E..	13.0	16.5	1.27	49	.290

Here, where equal powers secured equal speeds, the slip of B was 16¾ per cent, the efficiency falling off. E at 10½ per cent was more efficient, and continued to be, to 18 knots, due to the slip only increasing to 13 per cent, the loss of efficiency being scarcely perceptible; whereas B started handicapped, and remained so, notwithstanding its slip was increased to about 22 per cent, where efficiency was reduced by 8 per cent. The increase of speed secured was three-quarters of a knot, and had power been fixed, the speed of 18 knots could not have been attained.

The diameter of the B propeller was evidently the cause of failure. On its alteration with practically equal area, the desired result was obtained by propeller E, with about 10 per cent increase of revolution.

The classic researches of the Froudes are well known, and have been handed down and cherished with great care. The experiments of Mr. Yarrow, some 25 years ago, as to the best position of the propeller, laterally, longitudinally, and vertically, were, and still are, of great value. The information furnished by the exhaustive trials of model screws in the experimental tank at Washington by Constructor Taylor cannot be over-estimated. The determination of the values of the functions which constitute a propeller have been made for almost every range of pitch and diameter ratio, area, and efficiency, and generally show that efficiency of screw per se rises to a maximum at about 20 per cent slip, and falls off at higher slips by increase of thrust. The measure of efficiency of a screw appears to be related to its capacity for absorbing power and delivery of

TABLE 1

I. H. P.	Speed in knots.	Displacement in Tons No. of Ship 2.	3.	4.	5.	7.	9.	11.	1a.	3a.	5a.	1b.	3b.	5b.	12.	13.	14.	15.
68,000	26	37,000	.....	.....	34,100	39,800	.....	.....	10,000 to 36,750	13,000 to 35,000	15,050 to 29,600	34,200	31,800	11,000 to 14,000	.....	.....	.....	32,000
	26		.....	.....	31,700	33,500	38,500	37,750	12,300 to 34,050	16,100 to 32,000	19,000 to 24,800	10,000 to 31,000	14,250 to 25,200	.....	.....	.....	.....	27,500
64,000	25		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	26	33,000	37,500	39,250	29,000	27,500	34,500	33,000	9,200 to 39,600	8,900 to 39,400	8,600 to 33,600	37,800	37,600	30,550	.....	35,250	36,000	24,000
60,000	25		.....	.....	.....	.....	.....	.....	14,200 to 31,200	20,000 to 27,400	.....	14,000 to 26,600	.....	.....	.....	.....	.....	.....
	24		.....	.....	.....	.....	.....	.....	10,300 to 37,950	10,350 to 37,000	10,400 to 37,600	35,900	34,700	27,200	.....	.....	.....	.....
58,000	26		.....	.....	.....	.....	.....	.....	.....	.....	40,000	.....	.....	35,400	.....	.....	.....	.....
	25		.....	.....	.....	.....	.....	.....	15,450 to 29,600	.....	.....	.....	.....	.....	.....	.....	.....	.....
56,000	24		.....	.....	.....	.....	.....	.....	11,400 to 36,200	12,000 to 34,450	12,600 to 31,200	18,000 to 22,300	.....	.....	.....	.....	.....	.....
	26	28,500	32,750	35,000	26,500	22,000	30,000	27,000	.....	.....	.....	33,800	31,500	11,000 to 22,600	.....	.....	.....	.....
	26	23,750	28,000	31,000	23,750	17,500	26,000	19,000	17,200 to 27,500	.....	36,600	39,400	38,800	32,000	.....	.....	.....	40,000
52,000	25		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	33,400	29,200	29,600	21,200
	24		.....	.....	.....	.....	.....	.....	12,800 to 34,300	14,000 to 31,600	15,700 to 28,200	9,700 to 31,400	12,000 to 27,400	.....	26,600	24,200	24,800	18,800
48,000	26	19,000	24,500	27,000	21,000	13,500	22,500	16,000	39,000	38,100	32,800	36,800	36,200	28,100	.....	.....	.....	33,000
	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21,600	20,000	20,800	16,600
48,000									14,400 to 32,300	16,800 to 28,200	.....	13,000 to 28,800	.....	.....	.....	.....	.....	.....
	24	36,000	40,500	.....	31,500	35,000	38,500	37,500	35,700	33,800	28,800	33,900	33,000	23,400	.....	.....	39,000	28,000
	26	15,000	21,000	23,000	18,000	9,500	19,000	.....	.....	.....	.....	.....	.....	.....	17,600	16,800	17,600	14,600
44,000	25	.....	.....	.....	.....	.....	.....	.....	16,400 to 30,000	.....	.....	19,000 to 22,000	.....	.....	.....	.....	.....	.....
	24	32,000	35,000	.....	28,000	30,000	33,000	33,250	32,200	29,000	24,000	30,400	28,600	17,300	35,800	34,000	31,600	23,500
	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39,500	.....	.....	.....	.....
	26	11,000	17,750	19,300	15,500	.....	16,000	.....	.....	.....	.....	.....	.....	.....	14,400	14,000	15,000	12,800
40,000	24	27,000	29,500	35,000	24,500	25,250	28,000	28,500	28,000	23,000	16,100	25,600	20,000	6,600	30,600	25,000	25,600	19,800
	22	37,000	.....	.....	37,000	38,000	.....	.....	.....	.....	39,000	41,000	42,000	35,700	.....	.....	.....	39,400
	26	15,000	16,000	16,000	13,000	.....	13,250	.....	.....	.....	.....	.....	.....	.....	11,600	11,400	12,600	11,200
36,000	24	22,250	24,000	26,000	21,000	20,000	23,000	23,000	.....	.....	.....	16,000	.....	.....	25,400	30,200	30,800	16,600
	22	33,750	33,000	.....	.....	.....	.....	36,500	.....	38,800	33,600	37,600	37,000	30,900	38,600	40,000	39,200	31,000
	26	.....	12,250	13,000	10,500	.....	10,750	.....	.....	.....	.....	.....	.....	.....	9,000	9,200	10,400	9,800
32,000	24	17,250	19,750	20,750	17,250	14,000	18,000	18,250	15,000	.....	.....	.....	.....	.....	20,200	15,800	16,800	14,000
	22	28,000	35,000	.....	28,000	28,000	34,000	31,500	36,800	32,600	27,700	32,200	30,800	24,500	33,600	31,000	31,500	24,600
30,000	22	.....	.....	.....	.....	.....	.....	.....	32,400	29,200	24,400	29,000	27,500	20,500	.....	.....	.....	.....
	26	.....	9,800	10,500	7,800	.....	8,200	.....	.....	.....	.....	.....	.....	.....	6,400	7,000	8,500	8,400
28,000	24	12,000	15,500	16,250	13,800	6,520	14,500	.....	.....	.....	.....	.....	.....	.....	15,400	12,200	13,600	11,400
	22	23,000	27,000	.....	23,000	23,000	26,500	26,000	27,800	25,600	21,100	25,400	23,900	16,600	28,400	23,200	24,200	19,000
	26	.....	7,250	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,600	.....	6,600	7,000
24,000	24	6,000	12,000	13,000	10,250	.....	10,750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	22	18,000	20,500	20,500	18,000	17,250	19,500	19,500	19,200	17,700	14,000	17,600	15,600	10,000	10,600	9,000	10,600	9,000
20,000	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,000	.....	.....
	22	.....	.....	.....	.....	.....	.....	.....	12,600	8,400	.....	.....	.....	.....	6,000	6,000	8,000	6,800
16,000	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17,400	12,200	13,400	10,600
	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,000	8,000	9,200	7,000

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

thrust. The inference to be drawn from these results is that high speed of rotation, coupled with the necessary area, is the most economic way of securing propulsive efficiency at high speeds. In most cases small propellers operated by reciprocating machinery running relatively rapidly secure better speed results at high speeds than large propellers running relatively slowly. The reason appears not far to seek. A change of pitch alone sometimes secures better results, as in the case of a recent destroyer, fitted with turbine machinery, 1½ knots over 33 was reached by merely altering this factor. In the case of the cruiser Berwick, an alteration of screw proportions gave better results. One is almost inclined to think that had the same attention been directed to the screw propeller problem as has been bestowed on the form of vessels greater advantages than any slight variations which form effected would have been secured, and the advent of the turbine delayed for a decade at least.

Referring to Fig. 8, this shows the ideal curve of efficiency, on the theory of planes as recommended by Mr. Froude, and Rankine's ideal jet efficiency, both plotted on a basis of thrust. Efficiency in such cases invariably falls off after the slip reaches 20 per cent. It may also be noticed that the form of the curve approaches more nearly to Rankine's than Froude's, and, on the assumption that the former more accurately represents the ideal, the writer of the paper, from which these diagrams are taken, published in the "Transactions" of the American Society of Naval Architects of 1906, has framed a formula representing the efficiency that has already been reached in practice, viz., 80 per cent. It appears in a very convenient form, showing readily the influence of dimensions and thrust on efficiency, and is easily handled. Fig. 8 is plotted in view of turbine practice, to show the effect on efficiency, thrust and speed being constant, due to increase of diameter, 10 per cent being secured in this particular case by doubling this dimension. Since the efficiency of the turbine is limited by rotation of screw, this curve is very instructive. A few remarks only may be made with regard to cavitation. It is accepted generally that acceleration and thrust are the factors involved, and perhaps form of blade, yet, as a result of experiment, Constructor Taylor found that "one model tried exhibited signs of cavitation at five knots, distinct evidence at six knots, and pronounced at seven knots, but at a very much lower thrust than that at which it began to show cavitation at six knots, being about one-half." This phenomenon requires a great deal more research work before any dogmatic statement can be made as to the causes and period of its appearance. At any rate, it cannot concern the problem of Atlantic performances for some considerable time. It is to these performances that the writer wishes specially to refer—how can they be improved? It is suggested, since high reciprocating engines are unpopular, that by the employment of the turbine, taking full advantage of its capabilities, increased power, coupled with the increased efficiency it intrinsically possesses, a vessel of the length of the Campania can be driven economically and continuously across the Atlantic at a speed of 25 knots. What that means to the ship owner in first cost and upkeep little need be said. A design, however, has been prepared on these lines which can achieve this result, no difficulty having been experienced in providing ample room for the machinery and coal stowage on the weight the necessary power requires.

Table I indicates not only that this is possible, but many alternatives are within the range of achievement without radical departure in form from current practice. There appears to be no sound reason whatever for preventing the turbine doing the work its existence demands. It has been shown that speed is subordinate to stability, and that this has become today the determining factor in the design, associated with light, quick-running machinery, with relatively small screws; and on these lines the future of the Atlantic service appears to be directed.

BIDS FOR SEATTLE'S NEW FIRE BOAT.

Bids for the construction of a new fireboat for the city of Seattle, Wash., were opened by the board of public works on July 18. There were but two bidders for the boat complete, the Moran Co., of Seattle, whose bid was $165,000, and the Willamette Iron & Steel Works, of Portland, Ore., whose bid was $122,475. There were also a number of bids for different parts of the vessel, these bids complying to the requirements of the architects, amounting to $117,664.97. No award was made by the board as the various commercial and labor organizations have entered protests against having the work go outside the city as would be the case if the contract were awarded to the lowest bidder. The appropriation for the boat amounts to $125,000, and the bid of the Moran Co. being $165,000 it is not thought likely that the contract will go to it although Manager Paterson later offered to build the boat for cost and 10 per cent. An effort is being made to have the board decide in favor of the segregated bids amounting to $117,664.97.

The design of the boat is somewhat out of the ordinary, but the architects, McAllaster & Bennett, are certain that the boat will meet all requirements. She is to be 120 ft. long, 28 ft. molded beam, and 15 ft. molded depth. The hull construction is to be entirely of steel, the only wood used to be on the decks, which will be of Puget Sound fir. The boat is of the flush deck type. The propelling machinery is to consist of two sets of engines, each having two cylinders, 14-in. diameter by 16-in. stroke. Steam will be supplied by four Mosher boilers, each having 2,500 sq. ft. of heating surface. The fire fighting apparatus will consist of three complete sets of crank and fly wheel fire pumps of the American fire engine type, each of the units being required to deliver 3000 gallons of salt water per minute at a pressure of 200 lbs. They are to be built strong enough to stand a working pressure of 300 lbs. when required. There is to be one 5-in. tip on the pilot house and three 2-in. tips on each side of the vessel together with 16 outlets for 3½-in. hose. These are all to be supplied from two 14-in. mains leading from the pumps.

The scout cruiser Salem is to be sent to the Massachusetts city for which she is named some time after Sept. 1 in order that the citizens of that city may present her with testimonials. The gifts which it has been proposed to present to the Salem are a representation of the city's seal in bronze, to be attached to the after part of the mainmast on the quarter deck, a silver service for the use of the officers, and a phonograph with records for the use of the crew.

The Huntington Manufacturing Co., a boat building establishment operated by Eugene A. Nelson at New Rochelle, N. Y., has filed a petition in bankruptcy with liabilities of $12,195. Assets are rated at $8,230.

Generated on 2024-08-28 16:16 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Accidents of a Month.

The accompanying list of accidents during the month shows considerable destruction to vessel tonnage on the lakes, the total losses numbering six, and other serious damage resulting through collisions. The schooners Acacia and James G. Blaine were blown ashore in a storm on Lake Ontario and destroyed and the steamers R. McDonald, Frontenac, Charles A. Street and fishing tug Alzora were burned. The schooner Ira Lawson which stranded in Sturgeon Bay has also been abandoned as a probable total loss.

Eight collisions occurred between vessels, the most serious of which was that between the steamers H. P. McIntosh and M. A. Hanna in the St. Clair river. Both vessels have been docked for repairs, the McIntosh at Cleveland and the Hanna at Toledo. The McIntosh went aground after the collision and it took two weeks of continuous work on the part of wreckers to pull her off. She had twenty plates and a number of frames broken as well as a large hole through her port side and other minor injuries. The stem of the Hanna was badly twisted and several plates were broken.

Other causes responsible for the numerous accidents were disabled machinery, strandings and collisions with draw bridges and docks.

DATE.	NAME OF VESSEL.	NATURE OF ACCIDENT.	PLACE.
July 7	Str. H. P. McIntosh	Collided with Str. M. A. Hanna; 20 plates and a number of frames broken; hole 6 ft. wide and 12 ft. deep on port side; released July 20 and docked at Cleveland for repairs	St. Clair river.
July 7	Str. M. A. Hanna	Collided with Str. H. P. McIntosh; stem twisted and number of plates broken; repaired at Toledo	St. Clair river.
July 7	Bge. Alex. Holley	Ran aground during heavy wind; bottom slightly damaged and dent in bow	Lake Erie.
July 7	Str. Chas. S. Hebard	Ran ashore; released herself, uninjured	White Fish Point, Lake Superior.
July 8	Sch. Acacia	Ran ashore in storm; total loss; wreck and cargo later sold for $500	Bullrock Pt., Lake Ontario.
July 8	Bge. Jas. G. Blaine	Ran ashore; total loss	Lake Ontario, off Oswego.
July 9	Str. Columbia	Ran aground; released uninjured	Sandusky.
July 11	Str. Tuscarora	Ran ashore; released, uninjured	Mackinaw Island.
July 12	Str. Black Rock	Lost rudder; repaired at Port Huron	St. Clair river.
July 13	Bge. Chieftain	Ran aground; released on 15th after lightering; stern badly damaged	Niagara river.
July 13	Str. O. M. Poe	Stranded in heavy fog; released on 15th after lightering; leaked slightly	Foot of dyke, Sault river.
July ..	Sch. Ira Lawson	Stranded; abandoned	Sturgeon Bay.
July ..	Str. Orinoco	Became disabled; shoe and rudder damaged; towed to Bay City for repairs	Lake Superior.
July 14	Str. Mary Horton	Carried away two gates from lock No. 13	Welland Canal.
July 17	Str. H. W. Williams	Collided with Sch. Lucy Simpson; not damaged	Lake Michigan.
July 17	Sch. Lucy Simpson	Collided with Str. H. W. Williams; bow badly damaged and sails carried away	Lake Michigan.
July 17	Str. R. McDonald	Burned to water's edge	Sackett's Harbor, Lake Ontario.
July 17	Str. Starrucca	Broke eccentric strap; stopped at Port Huron for repairs	Lake Huron.
July 17	Sch. Lillie	Struck by Str. Dunelm in storm; sank in shallow water; floated on 19th and placed in dry dock	Cuyahoga river, Cleveland.
July 17	Str. Dunelm	Struck Str. Lillie; not injured	Cuyahoga river, Cleveland.
July 17	Str. Frontenac	Fire; total loss; also damaged docks of American Ship Building Co.	Lorain.
July 18	Str. Randolph	Machinery became disabled in mid-lake; towed to Milwaukee and docked for repairs	Lake Michigan.
July 19	Str. Maricopa	Stranded on shoal; released herself, uninjured	St. Clair river.
July 19	Bge. Bryn Mawr	In tow of Str. Maricopa; struck by current and carried broadside down river, colliding with Str. H. P. McIntosh, damaging her considerably; stern and boiler house of Bryn Mawr badly damaged and plates on side crushed in; repaired at Lorain	St. Clair river.
July 19	Str. Colonel	Ran aground; released after lightering 100 tons; four bottom plates damaged, as well as frames; docked at Detroit	Sandusky Bay.
July 19	Str. Sachem	Crashed into barge McWilliams; not seriously damaged	North Channel.
July 19	Bge. McWilliams	Hit by steamer Sachem; mizzen boom damaged on starboard quarter	North Channel.
July 20	Sand scow Junior	Machinery became disabled in mid-lake	Lake Michigan.
July 20	Fishing tug Alzora	Fire; total loss	Saginaw Bay.
July 21	Str. Havana	Ran aground; released on July 22	Portage river.
July 21	Str. Charles A. Street	Fire; total loss	Lake Huron.
July 23	Bge. Twin Sisters	Broke away from tug Vigilant; ran ashore on Gallop Rapids; released Aug. 10; repaired	Iroquois canal.
July 24	Bge. J. R. Edwards	Fire; damage estimated at $300	Wolverine dry dock, Port Huron.
July 24	Str. Ionic	Rudder braces smashed; docked at Duluth for repairs	Fort William.
July 26	Sch. Isolda Bock	Hit by steamer Corsican; entire jib boom and forward upper bow carried away; towed to port	Lake Superior, near Two Harbors.
July 27	Str. Wm. Rudolph	Blew out her cylinder head; towed to Milwaukee dry dock	Lake Michigan.
July 27	Pass. Str. Huron	Hit a scow; two plates cracked	Cuyahoga river, Cleveland.
July 28	Scow	Rock ran through her bottom; sank	Lake Erie.
July 29	Str. Daniel B. Meacham	Ran on rocks in fog; released in two days after lightering 2,000 tons; stem damaged and Nos. 1 and 2 tanks on starboard side leaked; number of bottom plates damaged	Passage Island, Lake Superior.
July 30	Lighter Lorain	Sank. Floated Aug. 8; not damaged	Lorain.
July 30	Str. A. B. Wolvin	Ran aground in fog; released, uninjured; ran aground again after being released; hole in bow; docked at Duluth	Portage Entry.
July 30	Bge. Lyman Casey	Rammed by unknown steamer; large hole in planking on bow	Detroit river.
July 30	Str. E. A. S. Clarke	Steering gear disabled; went to Marine City for repairs	St. Clair river.
July 31	Pass. Str. Holland	Crosshead broke and machinery otherwise disabled	Lake Michigan.
July 31	Bge. C. C. Barnes	Caught in wind storm; sails carried away	St. Clair river.
July 31	Str. Rappahannock	Quadrant broke, causing her to run aground; released herself; repaired at Port Huron	St. Clair river.
Aug. 1	Str. Scranton	Collided with S. O. Tank No. 86; two large holes in port bow, and considerable framework broken; 15 damaged plates; went to Superior for repairs	Portage river.
Aug. 1	Standard Oil Tank No. 86	Collided with steamer Scranton; port bow stove in	Portage river.
Aug. 1	Str. W. H. Wolf	Collided with lightship; not injured	Poe's Reef, Lake Huron.
Aug. 1	Lightship	Hit by steamer W. H. Wolf; bulwarks stove in and small boat carried away	Poe's Reef, Lake Huron.
Aug. 2	Str. Mahoning	Struck by Van Buren street bridge; forward mast broken off	Chicago river.
Aug. 3	Sch. Cora	Caught in storm; foremast, maintopmast, jibboom and entire forward works wrecked; repaired at Manitowoc	Lake Michigan.
Aug. ..	Str. Geo. W. Perkins	Ran ashore; five or six damaged plates on bottom	Lake Superior.
Aug. 4	Fire tug Illinois	Sank in slip while fighting grain elevator fire; tons of brick fell on deck of steamer	Chicago river.

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

DATE.	NAME OF VESSEL.	NATURE OF ACCIDENT.	PLACE.
Aug. 4	Str. Wm. A. Paine	Crashed into dock and tore foundation from under a building; two stories of brick fell on steamer's deck; several badly dented hatches and deck plates	Cuyahoga river, Cleveland.
Aug. 5	Str. Western Star	Ran aground during heavy gale; released, uninjured	Buffalo harbor.
Aug. 5	Str. Crete	Ran aground in heavy gale; released on Aug. 8, uninjured, after lightering 1,500 tons of coal	Buffalo harbor.
Aug. 5	Str. Columbia	Ran on rock	Lake Ontario, near Kingston.
Aug. 7	Str. Alaska	Smokestack collapsed and rudder became disabled in midlake; towed to Chicago ship yard for repairs	Lake Michigan.
Aug. 8	Str. City of London	Stranded; released, uninjured	Sturgeon Bay.
Aug. 9	Str. Russell Sage	Ran aground	Lake Ontario.
Aug. 10	Str. Iowa	Struck by a steamer while passing through bridge; slightly injured	Milwaukee.

ATLANTIC COAST GOSSIP.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

The first cargo ever shipped from the United States to Karanginte, Dutch East Indies, was forwarded from Philadelphia last week on the British steamship Seneca. Karanginte is in the southern part of Java, and is but little frequented.

The steamship Goldsboro, which carried the Baileys, of the Export Shipping Company, to Honduras with a cargo valued at $250,000 arrived at Mobile last week. The Goldsboro is in command of a petty officer of the U. S. gunboat Marietta, and was leaking badly on arrival.

The old New York schoolship St. Mary's, which was withdrawn from the service recently and offered for sale, has been purchased by Butler & Co., of Boston, for $5,052. The Shearwater, a steel schooner-rigged converted yacht built in 1887 at the Atlantic Works, Boston, and once used as a training ship by the Naval Militia of Philadelphia, was sold by the Government to Samuel B. Wilson, of Philadelphia, for $1,536.

The Gloucester, Mass., fishing schooner Maggie and May was run down and sunk by the German schoolship Feya in a dense fog on Aug. 8, 60 miles southeast of Halifax. Four of the crew of the Maggie and May were rescued, Capt. Erick McCathran and eight of the crew being drowned. The warship was going about 8 knots at the time of the accident, the course of the vessel being altered as quickly as possible. The schooner, which was struck about 20 feet from the bow, was almost cut in two, the Feya being only slightly injured.

It is reported that the White Star Line has opened negotiations for the construction of an immense dry dock at Southampton. The report, which comes from England, gives the dimensions of the dock as being capable of receiving the coming leviathans Olympic and Titanic, of the New York service. Since the White Star Line established a service from Southampton to New York the records for the year ending May 31, show that 42,260 passengers have sailed from Southampton on the White Star and American Line steamers.

The German steamship Sachsenwald towed the Norwegian steamship Hanseat into Bermuda recently. The Hanseat, which was bound from Rio Janeiro for New York, lost her propeller in midocean.

The White Star Line steamship Cedric was slowed down for two hours on her last westbound passage, to permit the surgeon of the vessel to operate on a passenger. The surgeon had the assistance of a passenger, also a surgeon, and the operation was a success.

The steamship North Star, of the Maine Steamship Company, passed through the path of last week's heavy storm while on her way from New York to Portland. For a time the electric storm affected the instruments and apparatus on the vessel, and shocks were experienced on the bridge.

The special international conference of representatives of the great shipping companies, called to regulate the steerage rate war between the Mediterranean and other parts of the world, at Paris, has adjourned without reaching any definite decision on the matter.

Fire broke out on Saturday in the forepeak of the British steamship Brumcliff, which cleared New York on Friday for Bahia. The extent of the damage done is unknown.

A large shipment of bituminous coal was sent to Italy this week on the Italian steamship Italia, which sailed from Philadelphia. The cargo amounted to 6,387 tons of Pennsylvania coal, and was shipped by the Berwind-White Coal Mining Company.

The new German steamship Niagara, built in England for the German-American Oil Company, and said to be one of the finest bulk oil carriers afloat, arrived at New York last week from Shields.

The ship Edward Sewell, which left Honolulu on April 6, arrived at the Delaware breakwater last week with a cargo of sugar, her passage being unusually long.

MULHOLLAND HATCH FASTENERS.

Capt. M. Mulholland, the inventor of the Mulholland hatch fastener, has received an order from the United States government to install his hatch fastener upon the colliers Vestal and Prometheus. He has also received a letter from Capt. J. J. H. Brown, of Buffalo, to the effect that the fasteners are working very successfully on the steamers Wm. H. Truesdale and J. J. H. Brown. It is interesting to observe that these vessels are fitted with Brosseau hatches operated by chain gears. Some doubt was expressed as to whether the Mulholland fastener was adaptable to this form of hatch cover, but Capt. Brown says that it works very satisfactorily indeed.

Following are the correct signals for opening the bridges in Duluth harbor: Interstate bridge, one long, one short and one long blast; Minnesota draw, Northern Pacific bridge, one long, two short blasts; Wisconsin draw, Northern Pacific bridge, two long, two short blasts; Grassy Point bridge, two short, one long blast; Lamborn avenue bridge, three short blasts. The duration of a long whistle should not exceed three seconds. The duration of a short whistle should not exceed one second.

Leander Graham, Port Grevile, Nova Scotia, launched the two-masted schooner King Josiah recently. She is 98 ft. long, 29 ft. beam and 9 ft. deep and registers 147 tons. The vessel is all hardwood planked and is designed for the lumber trade between Nova Scotia and the United States. She is owned by Josiah Soley, of Lower Economy, N. S.

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

TO PREVENT OHIO RIVER FLOODS.

Offices have been established and a corps of engineers are making the vicinity of Cincinnati the headquarters for a survey of the Ohio river basin to determine if it is possible to store the water to prevent disastrous floods. Col. Thomas P. Roberts, in a recent number of the *Engineering News,* considers some of the factors in the problem. He says:

"It is an extremely intricate and difficult problem to combine flood control, water power and maintenance of a given navigable depth in our western rivers with one set of reservoirs. One would think to restrain floods the reservoirs should be kept empty as much as possible, while for the maintenance of navigation as much as possible of the spare water from the winter and spring storms should be stored. Even with all such spare water over the entire territory above Pittsburg thus stored, the desired depth of 9 ft. for the upper Ohio could not possibly be maintained. Even if that depth could be maintained, as Gen. Mackenzie, chief of engineers, United States army, has pointed out, there would be such a strong and constant current that the prospect for a profitable upstream movement of freight in fleets of barges, now entertained by the friends of river improvement, would be poor indeed.

"It cannot be too greatly emphasized that unless freight is to be moved in our rivers in the future in great volume at a low rate they are not worth the cost of improvement, and realizing this fact the cost of transportation is receiving much attention by the United States engineers. There is sufficient experience on the Ohio to demonstrate what is possible for that river when improved by dams with locks for both up and down stream movement of freight in fleets of barges of aggregate capacity of say 5,000 tons up and 12,000 tons down. A persistent depth of 9 ft. or less, in the absence of locks and dams, would be very trying for upward bound fleets, as they would have constantly to breast a powerful current, the depth not being sufficient to develop shore eddies which they would take advantage of, while for the down stream fleets the steamers would be frequently backing, flanking, etc., to avoid running aground. Under such circumstances there would be much lost time, and fuel expense, especially, would be heavy, while for the upward bound steamers they would be able to carry as a rule but little freight on their barges. River engineers have never, I believe, doubted the possibility of reducing flood heights by means of storage reservoirs. Most of them think, however, the reservoirs should be very numerous, as otherwise the storms may strike regions not under sufficient control, as actually occurred during the March, 1907, flood at Pittsburg. Again also in the case of the January, 1907, flood, which Mr. Leighton takes to illustrate his theories, he makes the mistake of including the storage effect of the reservoirs above Pittsburg with the reservoirs below that city as tending to reduce the flood height of Jan. 21 at Cincinnati. Cincinnati is 466 miles below Pittsburg, and only 600 miles or more below some of the largest of the projected reservoirs at the headwaters. It takes usually four to five days for floods to run from Pittsburg to Cincinnati. The flood at Pittsburg reaches its maximum on the 20th, or only one day prior to its maximum height at Cincinnati. Therefore, if the whole Ohio river at Pittsburg had been suddenly shut off on Jan. 20 it is difficult to conceive how the elimination of that water could have reduced the flood heights at Cincinnati on Jan. 21. It is plain that the effectiveness of reservoirs for some floods is greatly diminished by distance from the stations sought to be protected.

"The first wide place is Pittsburg. In a high flood stage the Allegheny in 40 hours passes as much water as the reservoir would hold. The Ohio would carry it off at high flood height in about 14 hours, owing to its greater sectional width. The Johnstown reservoir emptied itself in one hour. The Mahoney might be allowed five hours to do the same, during which time its contents would be spread up and down the Allegheny valley. Questions as to the depths, slopes and velocities of the river and possible damage this extra water might do at Pittsburg and elsewhere are of interest to nervous inquirers, who will doubtless increase in number, and should be answered. It may be mentioned that almost the entire business section of Pittsburg, including the manufacturing and furnace districts, would be submerged by any flood of 10 to 12 ft. greater height than floods of the past.

"To conserve floods and develop water power, a suggestion by J. W. Arras, United States assistant engineer, Pittsburg district, is worthy of consideration. In brief it is as follows:

"1. Numerous small and medium-sized reservoirs on the secondary tributaries.

"2. With contracted outlet the reservoirs would act as do lakes in lengthening the period of discharge of flood waters.

"Unless drawn upon for power the reservoirs would be constantly full.

"3. Estimating the dams to range in cost from $5 000 to $100,000, about 2,000 could be built for $100,000,000.

"4. The United States to pay a small bonus for such of the dams which produced no revenue, thus encouraging land owners to construct them for their own benefit and protection.

"5. The volume of discharge from water power streams not expected to seriously incommode navigation on the improved Ohio."

BIDS FOR DREDGING IN PASCOGULA RIVER, MISS.

Bids received by Major H. Jervey, corps of engineers, United States army, Mobile, Ala., for dredging at the mouth of the Pascogula river, in Mississippi, were as follows:

	Cents per cu. yd.
Bowers Southern Dredging Co., Galveston, Tex.	11½
John Anderson, Gulfport, Miss.	11¾
North American Dredging Co., Galveston, Tex.	12

All place measurement.

BIDS FOR DREDGING PAWTUCKET RIVER, R. I.

Bids received by Major Harry Taylor, corps of engineers, United States army, Newport, R. I., opened July 22, for improving Pawtucket river, R. I., were as follows:

	—Per Cubic Yard— Dredging	Rock Removal
Coastwise Dredging Co., Norfolk, Va.	16.9c	$8.25
P. Sanford Ross, Inc., Jersey City, N. J.	24.5c	8.40
R. G. Packard Co., New York, N. Y.	.....	7.70
International Contracting Co., New York, N. Y.	20c	.....
Degnon Contracting Co., New York, N. Y.	17 2/3c	8.50
John J. Fitzpatrick, Plattsburg, N. Y.	.....	6.66
W. H. Beard Co., New York, N. Y.	22.4c	.....
J. S. Packard, Providence, R. I.	14 6/7c	.....
Maritime Dredging Co., New York, N. Y.	34c	18.00
Roy H. Beattie, Fall River, Mass.	.....	7.20
Johnston & Virden, Lewes, Del.	26.5c	6.92

BIDS FOR CONCRETE SEA WALL.

Bids for the construction of a concrete sea and retaining wall at the Maurice River light station, N. J., opened on July 18, by the lighthouse engineer at Wilmington, Del., were as follows:

*Arnold Naudain, Marshalltown, Del.	$3,910.70
I. K. Wills Co., Wilmington, Del.	4,072.00
Talnall, Brown Co., Wilmington, Del.	4,323.32
James H. Stitzer Jr., Philadelphia, Pa.	4,878.40
William Linker, Philadelphia, Pa.	5,494.22
Gandiosi & Clemens, Philadelphia, Pa.	6,902.80

*Accepted.

Generated on 2024-08-28 16:18 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

SAWDOLET

is a plastic substance, about the consistency of mortar when applied but hardening rapidly into an indestructible monolithic flooring, impervious to dust, water or fire.

It makes a substantial flooring for ships or for general flooring. It sticks to iron, brick or wood.

SAWDOLET C. CLEMENTE CLEVELAND O.

Sawdolet can be colored any tint to meet any decorative scheme in joiner work.

The following lake steamers have been fitted with Sawdolet:
J. J. Sullivan, D. R. Hanna, James B. Morrow, M. Andrews, L. S. DeGraff, W. M. Mills, The Odonah, Crete, Cyprus, Adriatic, Verona J. G. Morse, Erba, C. W. Kotcher, B. F. Berry, John Dunn, Jr., J. H. Brown, Wm. H. Truesdale, W. H. Wolff, A. E. Nettleton, John A. Donaldson, Americana, car ferry Marquette and Bessemer No. 2, Douglas Houghton, William Edenborn and Queen City, Lowell, F. McKinney.

C. CLEMENTE, Sole Owner
1722 Oregon Ave. Cleveland, Ohio

HYDE WINDLASSES and CAPSTANS

The Hyde Steam and Power Windlasses and Capstans are the best in the market.

They have been selected for most of the vessels now building for the Navy Department, Revenue Marine, Lighthouse Board and United States Coast Survey.

They are being furnished for the majority of the highest class Steam Ships, Merchant Vessels and Yachts now building.

HYDE WINDLASS COMPANY, Bath, Maine.

Geo. L. McCurdy

169 Jackson Boulevard
CHICAGO ILLINOIS

INSURANCE

HULLS and CARGOES

DIRECT REPRESENTATIVE OF LEADING AMERICAN AND FOREIGN UNDERWRITERS

The Upson-Walton Co.

CLEVELAND, OHIO

AMONG the first vessels that we fitted out was the Nellie Redington. That was nearly forty years ago, but the Nellie Redington is still afloat.

Among the latest vessels that we have fitted out is the Henry Phipps.

The Redington carries 1,500 tons; the Phipps, 12,000 tons.

As 1,500 is to 12,000 so is The Upson Walton Co. of thirty-six years ago to the Upson Walton Co. of today.

Our reputation as Outfitters of Vessels has grown year by year.

Aids to Navigation

are of vital importance to vessel interests.

SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all vessel interests, because of the wide and unobstructed channel provided for navigation, enabling vessels to pass easily and rapidly through the draw. Accidents and damages from collisions with center piers absolutely avoided.

The Scherzer Rolling Lift Bridge Co.

Main Offices: 1616 Monadnock Block, CHICAGO, U. S. A.
Cable Address: Scherzer, Chicago.

The Martin-Barriss Co.

654 Seneca Street CLEVELAND, OHIO

IMPORTERS AND MANUFACTURERS OF

MAHOGANY
WHITE MAHOGANY
and all Native Cabinet Woods

High Grades of Kiln Dried Woods for Cabin Work and Inside Trim
WHITE OAK TIMBERS AND PLANK
Constantly on Hand and Sawed to Order on Short Notice

Generated on 2024-08-28 16:16 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

ADVERTISERS

The Star indicates alternate insertions, the Dagger once a month.

Admiral Anchor Co..... 2
Almy Water Tube Boiler Co.. 37
†American Balance & Valve Co. —
American Injector Co..... 3
American Line 51
American Ship Building Co... 4
American Ship Windlass Co.. 2
Armstrong Cork Co..... 45
†Ashton Valve Co..... —
Atlantic Works 50
*Atlantic Works, Inc..... —

Babcock & Penton..... 49
Baker, Howard H., & Co..... 38
Belcher, Fred P..... 48
Boland & Cornelius..... 48
*Boston & Lockport Block Co. —
†Boucher Mfg. Co., The H. E. —
Bowers, L. M., & Co..... 43
Breymann, G. H., & Bros..... 39
Briggs, Marvin 38
†Brown Hoisting Machinery Co. ..... —
Buffalo Dredging Co..... 39
Buffalo Dry Dock Co..... 5
†Buffalo Ship Chandlery & Supply Co. ..... —
Bunker, E. A..... 52

Clark Wireless Telegraph & Telephone Co. 11
Chase Machine Co..... 36
Chicago Ship Building Co.... 4
Clemente, C. 35
Cleveland & Buffalo Transit Co. 49
Cleveland City Forge & Iron Co. 50
*Collingwood Ship Building Co. —
†Columbian Rope Co..... —
Continental Iron Works..... 2
†Copeland Co., E. T..... —
Cory, Chas., & Son..... 50
Cook's Sons, Adam..... 45
Coston Signal Co., Inc..... 11
Cramp, Wm., & Sons S. & E. B. Co. 8
†Crescent Machine Co..... —
Curr, Robert 49

Dake Engine Co..... 3
Delany, P., & Co..... 37
Detroit Ship Building Co..... 4
Dixon, Joseph, Crucible Co... 43
Donnelly Salvage & Wrecking Co. 45
Douglas, G. L., Jr..... 48
Drein, Thos., & Son..... 45
Dunbar & Sullivan Dredging Co. 39

Ekstrom, G. 49
*Ekenberg Milk Products Co. —
Elphicke, C. W., & Co..... 48
†Empire Ship Building Co... —

Falls Hollow Staybolt Co..... 37
Fix's, S., Sons..... 50
Fletcher, W. & A., Co..... 50
Fogg, M. W..... 45
Fore River Ship Building Co.. 50
Furstenau, M. C..... 49

General Electric Co..... 52
Gilchrist, Albert J..... 48
†Goldschmidt Thermit Co.... —
Goulder, Holding & Masten.. 48
Great Lakes Dredge & Dock Co. 39
Great Lakes Engineering Wks. 12
Great Lakes Register..... 9
*Great Lakes Towing Co..... —
†Griscom-Spencer Co. ..... —

Hall, John B..... 48
Hanna, M. A., & Co..... 41
Hawgood, W. A., & Co..... 48
Helm, D. T., & Co..... 48
Holmes, Samuel 48
Hoyt, Dustin, Kelley, McKeehan & Andrews..... 48
Hunt, Robert W., & Co..... 49
Huntsbery Co., H. E..... 9
Hutchinson & Co..... 48
Hyde Windlass Co..... 35
Hyner, P. D..... 48

†Ideal Pump Governor Co.... —
Industrial Law League, Inc... 43
International Mercantile Marine Co. 51

Jenkins Bros. 52
Jenkins, Russell & Eichelberger 48
Johnston Brothers..... 37

Kahnweiler's Sons, David..... 45
Katzenstein, L., & Co..... 49
Kidd, Joseph 49
Kingsford Foundry & Machine Works 37
Kremer, C. E..... 48

*Le Mois Scientifique et Industrial 49
Lorain Coal & Dock Co..... 49
Lundin, A. P..... 52

McCarthy, T. R..... 48
McCurdy, Geo. L..... 35
MacDonald, Ray G..... 48
Manistee Iron Works Co..... 37
*Marine Iron Co..... —
†Marine Iron Works ..... —
Marshall, Alexander 48
Martin-Barriss Co. 35
Maryland Steel Co..... 10
Mehl, Edward 48
Milwaukee Dry Dock Co..... 5
Mitchell & Co..... 48
Morse, A. J., & Son..... 45

Nacey & Hynd..... 49
National Cork Co..... 45
†National Tube Co..... —
Nevins & Smith..... 49
Newport News Ship Building & Dry Dock Co..... 6
New York Ship Building Co.. 7
†Nicholson Ship Log Co..... —
Northern Dredge Co..... 39

O'Connor, J. J..... 48
Otis Steel Co..... 3

Parker Bros. Co..... 48
Penberthy Injector Co..... 52
Pickands, Mather & Co..... 41
Pittsburg Coal Co..... 41

Quintard Iron Works Co..... 50

Richardson, W. C..... 48
*Ritchie, E. S., & Sons..... —
Roberts Safety Water-Tube Boiler Co. 37
Roelker, H. B..... 45
†Rogers Steam Oil Separator Co. ..... —
Root, W. O..... 49
Ross Valve Co..... 50

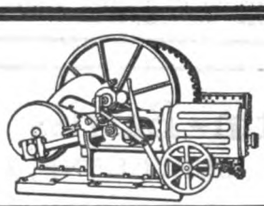
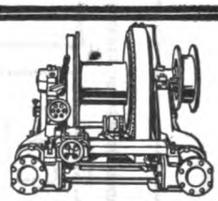
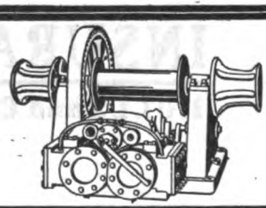
Safety Car Heating & Lighting Co. 2
Scherzer Rolling Lift Bridge Co. 35
Schrader's, A., Son, Inc..... 45
†Seneca Chain Co..... —
Shaw, Warren, Cady & Oakes 48
*Shelby Steel Tube Co..... —
(See National Tube Co.)
Sheriffs Mfg. Co..... 43
Shipping World Year Book... 51
Siggers & Siggers..... 38
Smith Coal & Dock Co., Stanley B. 41
Smooth-On Mfg. Co..... 51
Speddy, Joseph H..... 48
Starke, C. H., Dredge & Dock Co. 39
Stratford, Geo., Oakum Co.... 43
Submarine Signal Co..... 11
Sullivan, M. 39
Sullivan, D. 48
†Superior Iron Works..... —
Superior Ship Building Co.... 4

Thornycroft, John I., & Co... 43
Tietjen & Lang Dry Dock Co. 50
*Toledo Fuel Co..... —
Toledo Ship Building Co..... 5
Trout, H. G..... 43
Truscott Boat Mfg. Co..... 9

Upson-Walton Co. 35
Under-Feed Stoker Co. of America 41

Vance & Joys Co..... 48

Walker, Thomas, & Son..... 3
†Wilby, Carlton ..... —
*Watson-Stillman Co. ..... —
Willcox, Peck & Hughes..... 38
Wood, W. J..... 49

AUTOMATIC TOWING MACHINES
The Latest and the Best
Positively guaranteed

DOCKING ENGINES
Mooring Winches
Latest Improved Types

HOISTING ENGINES
Of all kinds and sizes and for all purposes especially for ship use

FOR THESE AND OTHER WELL KNOWN SPECIALTIES ADDRESS ALL INQUIRIES TO
THE CHASE MACHINE CO. ENGINEERS AND MACHINISTS CLEVELAND, O.

Generated on 2024-08-28 16:17 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE ROBERTS
SAFETY WATER-TUBE
BOILER CO.

Manufacturers of
High Grade

Marine Water Tube Boilers

Generators of the Highest Quality of Steam

OVER 1500 IN USE

Send for circulars
and stock sheet

MAIN OFFICE

39 Cortlandt St. New York City

Phone 500 Cortlandt

Works: Red Bank, N. J.
Phone, 40 Red Bank

Cable Address
"Bruniva"

MARINE BOILERS

Marine Repairs

Newburgh Steam Boiler Works

P. DELANY & CO.

Newburgh, N. Y.

Geo. R. Ray, Pres. Thomas Ray, V. P. & Treas. J. R. Ray, Sec'y.

Manistee Iron Works Co.

Builders of

HIGH-GRADE MARINE ENGINES,
BOILERS AND PUMPING MACHINERY

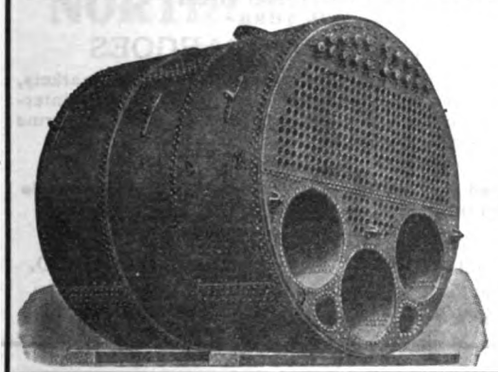
Did It Ever Occur to You

that we make the best Vertical Single Acting Steam Bilge Pump in the world? We do—and the price is right, too.

SEND FOR CUT AND DESCRIPTION

MANISTEE, MICHIGAN

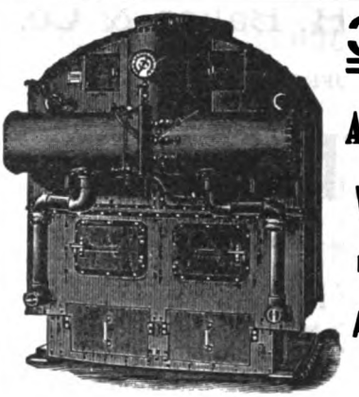
Modern Marine Boilers



Write

Johnston Brothers

Ferrysburg, Michigan



350 STEAM VESSELS

New Equipped With

ALMY'S PATENT
SECTIONAL
Water Tube Boilers

Bear Evidence of Their
Excellent Qualities

ALMY WATER-TUBE BOILER CO.

PROVIDENCE, R. I.

FALLS HOLLOW STAYBOLT BARS

ANY SIZE, OUTSIDE OR INSIDE DIAMETER.
AVERAGE LENGTH OF HOLLOW BARS
EIGHT TO TEN FEET.

FALLS HOLLOW STAYBOLT Co

BOTH HOLLOW AND SOLID,
MADE OF BEST QUALITY DOUBLE REFINED CHARCOAL
IRON OR STEEL. CUYAHOGA FALLS, O. U.S.A.

Staybolts are dangerously reduced in strength in the process of tell-tale drilling

HOLLOW STAYBOLTS

have the tell-tale hole rolled in the bar.

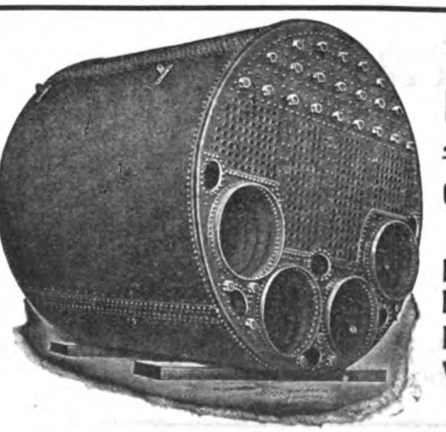
IN SERVICE

renders absolute safety and great endurance.

Send for Important Literature and Prices.

FALLS HOLLOW STAYBOLT CO., Cuyahoga Falls, Ohio

STAYBOLT IRON A SPECIALTY.



MARINE BOILERS

OF ALL TYPES

KINGSFORD FOUNDRY & MACHINE WORKS,

Oswego, N. Y.

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
UNIVERSITY OF MICHIGAN

CLASSIFIED ADVERTISING SERVICE

U. S. Engineer Office, Jones building, Detroit, Mich., July 22, 1908. Sealed proposals for earth excavation for lock pit at Sault Ste. Marie, Mich., will be received at this office until 3 P. M. Aug. 24, 1908, and then publicly opened. Information on application. C. McD. Townsend, Lieut. Col., Engrs.

U. S. Engineer Office, Milwaukee, Wis., July 27, 1908. Sealed proposals for building plank crib revetment, removing old pier, and dredging at Manistique Harbor, Mich., will be received here until 2 P. M., Aug. 26, 1908, and then publicly opened. Information on application. W. V. Judson, Major, Engrs.

PROPOSALS FOR DREDGING. U. S. Engineer Office, 813 Prospect St., S. E., Cleveland, O., August 7, 1908. Sealed proposals for dredging, Toledo Harbor, Ohio, will be received at this office until 2 P. M., Standard Time, August 17, 1908, and then publicly opened. Information on application. John Millis, Lieut. Col. Engrs.

THAT'S OUR BUSINESS

Buying, Selling, Chartering, BOATS

SPECIAL BARGAINS Let us hear from you.

CHICAGO STEAMER EXCHANGE,
No. 144 So Water Street,
Long Distance Phone Cent. 5046 CHICAGO

WANTED A FAST PASSENGER boat 14 to 15 miles or over, fore and aft compound engine, passengers allowed 150, steam boiler allowed 150 lbs. Address Box 131, the MARINE REVIEW, Cleveland, Ohio.

FOR SALE

14-24-40 x 30 Triple Expansion Engine.
22-50 x 30 F. & A. Compound Engine.
3 Steam Windlasses.
2 Steam Steerers.
Surface Condensers—200 to 3,500 sq. ft.
Steam Driven Jet Condensers.
Steam Driven Blowers.
30 K. W., 50 K. W., 75 K. W. Lighting Sets.
6 Almy Boilers.
Fire and Wrecking Pumps — Diving Gears.

MARVIN BRIGGS, Inc.
154 Nassau St., New York City.

FOR SALE. 400 ft. or 500 ft. of heavy iron chain, links 4½ in. long, made of ⅞-in. iron. Weighs 7½ pounds per ft. Will sell cheap. Morris Machine Works, Baldwinsville, N. Y.

WE DESIRE TO PURCHASE A tug with power not less than 20 in. x 22 in. engine. Write us giving full particulars. Schnorbach-Greiling Co., Muskegon, Mich.

STEAMERS FOR SALE.

FREIGHT AND PASSENGER steamer for sale, 500 gross tons. Allow 600 excursionists. Will sleep 75 night passengers. Address Box 123, THE MARINE REVIEW, Cleveland, O.

GAS ENGINE PRINCIPLES

in handy and condensed form are given in "Elements of Gas Engine Design"

By SANFORD MOSS, M. S., PH. D.

197 Pages. Price 50 cents.

A book that covers the facts of power generation from various fuels, actions in the cylinder, power and efficiency. Formulae, constants and a number of tables are also contained.

BOOK DEPARTMENT
The Penton Publishing Co.

Howard H. Baker & Co.

BUFFALO, N. Y.

HATCH COVERS

Made of

Wilford's

Waterproof Flax Duck

WILLCOX, PECK & HUGHES
Average Adjusters Insurance Brokers
3 South William Street
NEW YORK

HULLS AND CARGOES

We place insurances in the most advantageous markets, and have unequaled facilities for procuring, in the interests of our clients, the best obtainable rates and terms from the strongest Foreign and Home companies.

BRANCHES:
Cleveland Chicago Buffalo Minneapolis
Boston Seattle New Orleans

Represented by
C. T. BOWRING & CO., (Insurance) LTD.
Winchester House and at "Lloyd's", London
WE REPRESENT THE ASSURED

"Steam Turbines"—

An important reference work on scientific Steam Turbine construction with an appendix on Gas Turbines, and the future of Heat Engines. Contains 435 pages 6 x 9 inches, 241 cuts and 3 lithograph tables. Bound in heavy cloth. Price $4.50.

By DR. A. STODOLA
ZURICH

Order from
MARINE REVIEW
CLEVELAND

Translated by
DR. LOUIS C. LOEWENSTEIN
Lehigh University

Generated on 2024-08-28 16:14 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

M. SULLIVAN

DREDGING OF ALL KINDS

THE REMOVING OF DEEP WATER EARTH AND ROCK A SPECIALTY. - - -

721 West Ferry St.

BUFFALO, - - - N. Y.

Great Lakes Dredge & Dock Company

RIVER AND HARBOR IMPROVEMENTS

Foundations, Bridges, Piers, Breakwaters, Lighthouses, Tunnels, Pneumatic and Submarine Work.

CHICAGO

DULUTH CLEVELAND TOLEDO

SAULT STE. MARIE

G. H. Breymann & Bro's

CONTRACTORS FOR PUBLIC WORKS

Dredging, Dock Building, Etc.

5, 6 AND 7 MARINE BUILDING
TOLEDO, OHIO.

NORTHERN DREDGE COMPANY

Dipper and Clam Shell Dredges Especially Equipped for Rock Work and for Very Deep Dredging.

General Contractors on all MARINE WORK

Providence Bldg., DULUTH, MINN.

C. H. STARKE DREDGE & DOCK CO.,

Contractors for Public Works.

DREDGING, PILE DRIVING,
AND
SUBMARINE PIPE LAYING.

Canal Street, West of First Avenue,

Milwaukee, - - Wisconsin.

Buffalo Dredging Co.

GENERAL CONTRACTORS
ON
SUBMARINE WORK

Office
D. S. Morgan Bldg.

BUFFALO, N. Y.

Generated on 2024-08-28 16:16 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from UNIVERSITY OF MICHIGAN

BUYERS' DIRECTORY

Advertisements can be found readily by reference to the Alphabetical Index.

AGENTS (Vessel and Freight).

Boland & Cornelius, Buffalo, N. Y.
Douglas, G. L., Duluth, Minn.
Elphicke & Co., C. W., Chicago, Ill.
Hall, John B., Buffalo, N. Y.
Helm & Co., D. T., Duluth, Minn.
Hawgood & Co., W. A., Cleveland, O.
Holmes, Samuel, New York, N. Y.
Hutchinson & Co., Cleveland, O.
McCarthy, T. R., Montreal, Canada.
Mehl, Edward, Erie, Pa.
Mitchell & Co., Cleveland, O.
O'Connor, J. J., Port Arthur, Ont.
Parker Bros., Ltd., Detroit, Mich.
Richardson, W. C., Cleveland, O.
Sullivan & Co., D., Chicago, Ill.
Vance & Joys Co., Milwaukee, Wis.

ANCHORS.

Admiral Anchor Co., Chester, Pa.
Bowers & Co., L. M., Binghamton, N. Y.
Upson-Walton Co., Cleveland, O.

ARCHITECTS (Naval).

Babcock & Penton, Cleveland, O.
Curr, Robert, Cleveland, O.
Ekstrom, G., Detroit, Mich.
Kidd, Joseph, Duluth, Minn.
Nacey & Hynd, Cleveland, O.
Nevins & Smith, Chicago and Cleveland.
Wilby, Carlton, Detroit, Mich.
Wood, W. J., Chicago, Ill.

APPARATUS (Steering).

Akers Steering Gear Co., Chicago, Ill.
American Ship Building Co., Cleveland, O.
Chase Machine Co., Cleveland, O.
Dake Engine Co., Grand Haven, Mich.
Detroit Ship Building Co., Detroit, Mich.
Hyde Windlass Co., Bath, Me.
Marine Iron Works, Chicago, Ill.
Sheriffs Mfg. Co., Milwaukee, Wis.

APPARATUS (Submarine Diving).

Morse & Son, A. J., Boston, Mass.
Schrader's Son, Inc., A., New York, N. Y.

ARMORS (Submarine).

Morse & Son, Inc., Andrew J., Boston, Mass.
Schrader's Son, Inc., A., New York, N. Y.

ATTORNEYS AND PROCTORS IN ADMIRALTY

Gilchrist, Albert J., Cleveland, O.
Goulder, Holding & Masten, Cleveland, O.
Hyner, P. D., Erie, Pa.
Hoyt, Dustin, Kelley, McKechan & Andrews, Cleveland, O.
Jenkins, Russell & Eichelberger, Cleveland, O.
Kremer, C. E., Chicago, Ill.
MacDonald, Ray G., Chicago, Ill.
Marshall, Alexander, Duluth, Minn.
Shaw, Warren, Cady & Oakes, Detroit, Mich.

BAROMETERS, GLASSES, ETC. (Marine).

Ritchie & Sons, E. S., Brookline, Mass.

BARS (Iron or Steel—Hollow Staybolt).

Falls Hollow Staybolt Co., Cuyahoga Falls, O.

BELLS (Engine Room Telegraph Call, Etc.).

Cory & Son, Chas., New York, N. Y.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co., Boston, Mass.

BOATS (Builders).

Drein, Thos., & Son, Wilmington, Del.
Truscott Boat Mfg. Co., St. Joseph, Mich.

BOILERS.

Almy Water Tube Boiler Co., Providence, R. I.
American Ship Building Co., Cleveland, O.
Atlantic Works, East Boston, Mass.
Briggs, Marvin, New York, N. Y.
Chicago Ship Building Co., Chicago, Ill.
Copeland Co., E. T., New York.
(Copeland Scotch Improved.)
Cramp, Wm., & Sons, Philadelphia, Pa.
Delany, P., & Co., Newburgh, N. Y.
Detroit Ship Building Co., Detroit, Mich.
Fletcher, W. A., & Co., Hoboken, N. J.
Fore River Ship Building Co., Quincy, Mass.
Great Lakes Engineering Works, Detroit, Mich.
Griscom-Spencer Co., New York, N. Y.
Johnston Brothers, Ferrysburg, Mich.
Kingsford Foundry & Machine Works, Oswego, N. Y.
Maryland Steel Co., Sparrow's Point, Md.
Marine Iron Works, Chicago.
Milwaukee Dry Dock Co., Milwaukee, Wis.
New York Ship Building Co., Camden, N. J.
Quintard Iron Works Co., New York, N. Y.
Roberts Safety Water Tube Boiler Co., New York, N. Y.
Superior Ship Building Co., Superior, Wis.
Toledo Ship Building Co., Toledo, O.

BRASS GOODS.

Michigan Lubricator Co., Detroit, Mich.
Penberthy Injector Co., Detroit, Mich.

BRIDGES.

Scherzer Rolling Lift Bridge Co., Chicago, Ill.

BUCKETS (Ore and Coal).

Brown Hoisting Machinery Co., Cleveland, O.
Hayward Co., The, New York, N. Y.
Huntsbery, H. E., Cleveland, O.

BUOYS, BOATS, PRESERVERS, ETC. (Life).

Armstrong Cork Co., Pittsburg, Pa.
Drein & Son, Thos., Wilmington, Del.
Kahnweiler's Sons, David, New York, N. Y.
Lundin, A. P., New York, N. Y.
National Cork Co., Brooklyn, N. Y.

BUOYS (Gas).

Safety Car Heating & Lighting Co., New York, N. Y.

CANVAS.

Baker & Co., H. H., Buffalo, N. Y.
Upson-Walton Co., Cleveland, O.

CAPSTANS.

American Ship Windlass Co., Providence, R. I.
Chase Machine Co., Cleveland, O.
Dake Engine Co., Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.
Marine Iron Works, Chicago, Ill.

CAPSTANS (Steam).

Chase Machine Co., Cleveland, O.

CASTINGS (Brass and Bronze).

Griscom-Spencer Co., New York, N. Y.
Cramp, Wm., & Sons, Philadelphia, Pa.
Fore River Ship Building Co., Quincy, Mass.
Great Lakes Engineering Works, Detroit, Mich.

CASTINGS (Steel).

Otis Steel Co., Cleveland, O.

CEMENT. (Iron for Repairing Leaks.)

Smooth-On Mfg. Co., Jersey City, N. J.

CHAINS.

Seneca Chain Co., Kent, O.

CHANDLERS (Ship).

Baker, Howard H., & Co., Buffalo, N. Y.
Great Lakes Supply Co., Buffalo, N. Y., and Duluth, Minn.
Griscom-Spencer Co., New York, N. Y.
Upson-Walton Co., Cleveland, O.

CHARTS.

Penton Publishing Co., Cleveland, O.

CIRCULATORS (Automatic).

Copeland Co., E. T., New York, N. Y.

CLOCKS AND CHRONOMETERS (Marine).

Ritchie, E. S., & Sons, Brookline, Mass.

CLOTH (Waterproof).

Bunker, E. A., New York, N. Y.

COAL (Producers and Shippers).

Hanna, M. A., & Co., Cleveland, O.
Lorain Coal & Dock Co., Cleveland, O.
Pickands, Mather & Co., Cleveland, O.
Pittsburg Coal Co., Cleveland, O.
Toledo Fuel Co., Toledo, O.

COMPASSES.

Ritchie, E. S., & Son, Brookline, Mass.

COMPOUND (Boiler).

Bird-Archer Co., New York, N. Y.

COMPOUNDS (Lubricating).

Cook's Sons, Adam, New York, N. Y.

CONDENSERS.

Great Lakes Engineering Works, Detroit, Mich.

CONTRACTORS (Dredging).

Breymann & Bros., G. H., Toledo, O.
Buffalo Dredging Co., Buffalo, N. Y.
Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
Great Lakes Dredge & Dock Co., Chicago, Ill.
Northern Dredge Co., Duluth, Minn.
Starke Dredge & Dock Co., C. H., Milwaukee, Wis.
Sullivan, M., Buffalo, N. Y.

CONTRACTORS. (Pile Driving and Submarine.)

Buffalo Dredging Co., Buffalo, N. Y.
Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
Great Lakes Dredge & Dock Co., Chicago, Ill.
Parker Bros. Co., Ltd., Detroit, Mich.
Starke Dredge & Dock Co., C. H., Milwaukee, Wis.
Sullivan, M., Buffalo, N. Y.

CONTRACTORS (Public Work).

Breymann Bros., G. H., Toledo, O.
Buffalo Dredging Co., Buffalo, N. Y.
Dunbar & Sullivan Dredging Co., Buffalo, N. Y.
Griscom-Spencer Co., New York, N. Y.
Great Lakes Dredge & Dock Co., Chicago, Ill.
Starke Dredge & Dock Co., C. H., Milwaukee, Wis.
Sullivan, M., Buffalo, N. Y.

Generated on 2024-08-28 16:15 GMT / https://hdl.handle.net/2027/mdp.39015043584435
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN